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EDWARD JENNER: THE MAN AND HIS WORK

BY

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The two-hundredth anniversary of the birth of Edward Jenner, "the discoverer of vaccination," was celebrated on Tuesday, May 17, and the time is opportune for a brief review of Jenner's life and the beginning of the new idea which he inaugurated, and which he was fortunate in seeing widely established in his lifetime. No man has suffered more from the excessive eulogy of well-meaning friends and later admirers, or from the invective of those who for some reason or other did not subscribe to his views.

Early Life

Edward Jenner was the son of the Rev. Stephen Jenner, rector of Rockhampton and vicar of Berkeley, in Gloucestershire. Born on May 17, 1749, he was educated at first at Wotton-under-Edge under a Mr. Clissold, and then went as a pupil of the Rev. Dr. Washbourn at Cirencester. When he was 5 his father died, and the boy was looked after by his elder brother, who was also in Holy Orders. It was decided that Edward was to practise medicine, and at the age of 13 he was apprenticed to Daniel Ludlow, a surgeon of Sodbury, near Bristol. In 1770 he became a student at St. George's Hospital, London, and was for two years a house pupil of John Hunter. During this period a warm friendship sprang up between master and pupil, and after Jenner left London he and Hunter corresponded regularly for 20 years—until Hunter's death in 1793. Jenner's letters to Hunter have all been lost or destroyed. But Jenner preserved carefully Hunter's letters to him. They are now in the Royal College of Surgeons, and were printed by Baron in his biography of Jenner. The correspondence was occasioned by the fact that Jenner was no longer in London. In 1772 Jenner left London and settled in his native town of Berkeley as a country practitioner.

It should be said that this translation appears to have been made because he wanted to be a country practitioner. He had many of the qualities which are essential to a successful physician or surgeon in town. He had had a long training in a practice which probably gave him plenty of experience, and he had been a favourite pupil of the great John Hunter. Statements are still being made that Jenner was not "a doctor." This is of course nonsense. If by "doctor" is meant a man who has qualified for a doctorate in medicine, then a considerable proportion of those who legally—and successfully—practise medicine to-day would not be entitled to this appellation. In Jenner's time this entry by apprenticeship was the normal course of training for all general practitioners—that is, "doctors." It is true that Jenner did become later on M.D. of St. Andrews University, and that he did not sit any examination or present any thesis for the degree. But this was also quite a usual practice, and many other famous men have obtained their doctorate in the same way and at the same university. Jenner never became a Fellow of the Royal College of Physicians. He was asked to do so, but by the iron ruling of the statutes he could not be admitted without sitting an examination in Latin—and this trial he declined to undertake.

Jenner as a Country Practitioner

It was certainly his deep love of the county of his birth which induced Jenner to return to it and—with brief exceptions—to spend the remainder of his days there. He was by birth and breeding a countryman. He soon settled down in practice, and took an interest in what we would now term "current medical literature." He joined a medical society at Alveston, near Bristol, and was largely instrumental in the founding of a similar society at Rodborough. To the meetings of this latter society he contributed papers—especially one on ophthalmia and another on angina pectoris. There is every reason to believe that Jenner was a conscientious and successful practitioner. He also took an interest in music, played the flute and violin, and was a good fellow at social gatherings.

Jenner as a Naturalist

Love of nature was instilled into Jenner from his earliest years. We do not hear about it during his apprentice years, but when he was a pupil of John Hunter an event occurred which might have altered the course of his life. Captain Cook returned from his first voyage to the Pacific in 1771. A "Mr. Joseph Banks"—later Sir Joseph Banks, president of the Royal Society for 41 years—and a Swedish naturalist, Dr. Solander, had accompanied Cook on the voyage and had brought back a very large collection of botanical and zoological specimens. Edward Jenner was offered the job—no doubt a part-time one—of arranging the botanical specimens, and he did it well. According to one account he was even offered the post of naturalist to Cook's next expedition—but this could hardly have been the case.

When Jenner returned to Berkeley he carried on with his natural history pursuits, and from Hunter he received not only encouragement but repeated and insistent demands for specimens. We read of requests for the nests of various birds, a nest with a cuckoo's egg in it, for hedgehogs, and for all the many other animals or objects which John Hunter required in the course of his experiments. He even asked for a bustard—then becoming a rare bird—and got it. Jenner also carried out experiments under Hunter's directions. It was in a letter replying to comments or suggestions which Jenner had made that Hunter gave him the famous advice: "But why think? Why not try the experiment?"

In 1783 Hunter suggested to Jenner that he "must pursue the cuckoo this summer," and asked for "a true and particular account" of that bird. Jenner carried out his

FIG. 1.—The Old Vicarage at Berkeley, in which Jenner was born.

observations over a few years, and these resulted in a paper which was published in the *Philosophical Transactions of the Royal Society* in 1788 and for which Jenner was elected a Fellow in 1789. This paper contains many original observations of importance—especially those in which he describes how the young cuckoo actually throws its foster-brothers, or the eggs of its foster-parent, out of the nest. He described the extreme sensitivity of the wing tips of the young cuckoo during the performance of this operation, and also the fact that it has a depression between its scapulae which appeared to him to be designed to assist the performance. When the young cuckoo was 12 days old this depression had entirely disappeared. Accepted rather sceptically after their publication, these observations of Jenner's were supposed during the middle of the nineteenth century to have been quite discredited. In the last thirty years the acuteness and accuracy of Jenner's work have been vindicated—largely by the aid of photography.

In his later years Jenner took up the question of the migration of birds. He gave instances of various birds having been seen far out at sea, and showed that the same birds will return to the same place one summer after another. This paper was published in the *Philosophical Transactions* in the year after his death.

Smallpox and Inoculation

The incidence of smallpox in this country reached its peak in the eighteenth century. Although there were outbreaks all over the country, it was in London that the disease showed such a constant prevalence. In the 80 years between 1721 and 1800 the annual deaths from smallpox in the Metropolis were less than 1,000 in only five individual years. In 1772 it caused 3,992 deaths in London. But the pock-marked faces of so many dwellers in the great city bore striking witness to the prevalence of the disease—in contradistinction to its mortality.

The practice of inoculation for preventive purposes was well recognized during the second half of the eighteenth century. The "prevention" desired was of course that from death, and not from the disease, which was transmitted during the operation to the individual to be inoculated. Inoculated smallpox *was* often fairly mild, and the theory was that it was better to obtain protection as a result of a mild attack at a convenient time than to risk a severe and possibly fatal attack when one wanted it least. Practised in the East from ancient times, inoculation was introduced into this country by Timoni (1714) and by Pylarini, and a renewed effort to popularize it was made by Lady Mary Wortley Montagu (1721), who had just returned from seeing it performed in Constantinople. After 1738 the practice increased, but nothing could get over the fact that the inoculated disease was often not mild and deaths were not infrequent. In 1840 the practice of inoculation became illegal.

The Beginnings of Vaccination

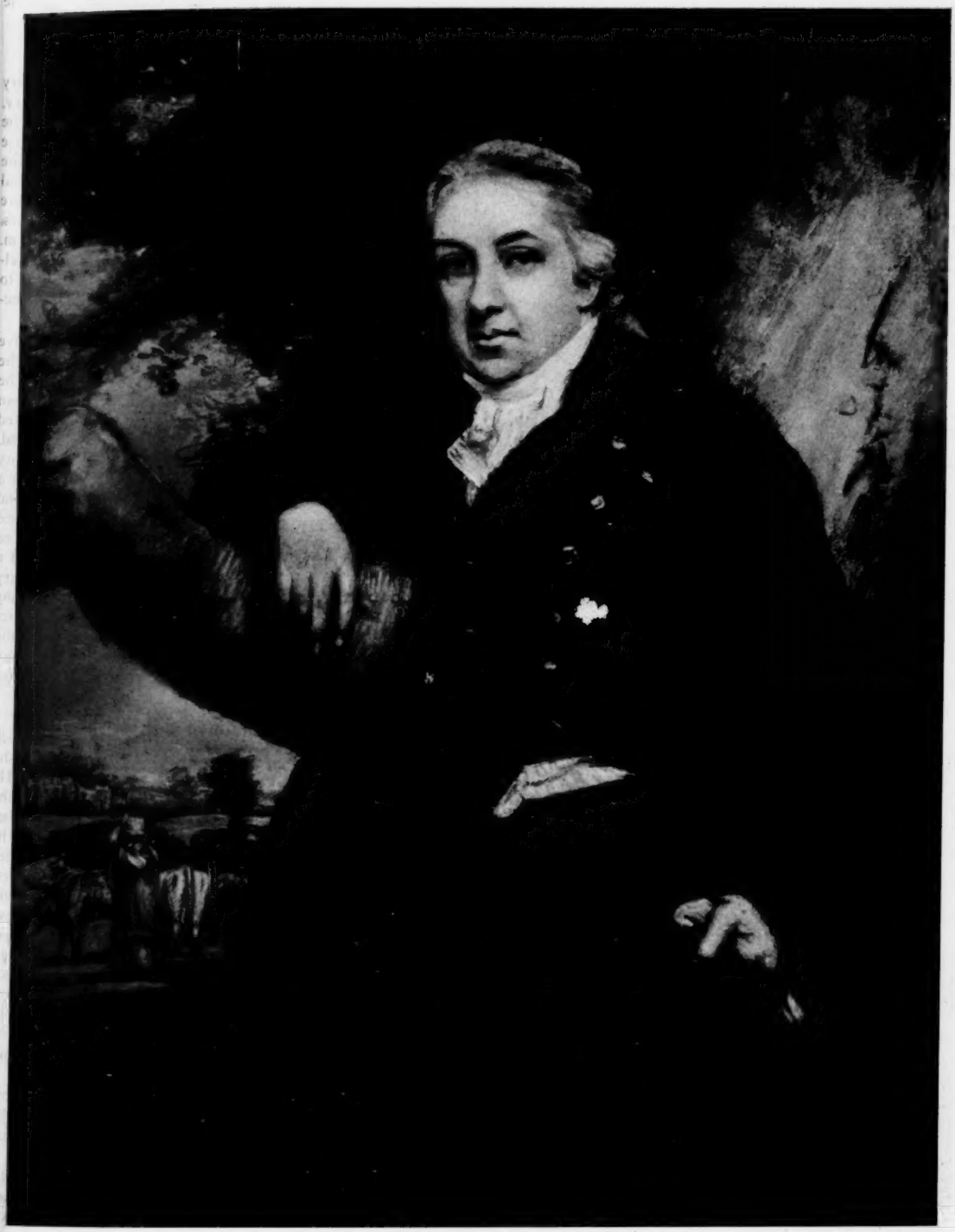
While he was an apprentice at Sodbury Jenner was struck by the fact that a young countrywoman had said that she could not take smallpox because she had had cowpox. He mentioned this curious statement to John Hunter, but the latter was apparently not interested. Years later Jenner began to collect examples of persons whom he could not inoculate successfully because they had had cowpox at some time during the course of their lives. Even at this early stage he seems to have been obsessed by the feeling that cowpox *ought* to give complete and permanent immunity to smallpox. This is indeed strange, since every practitioner knew that smallpox did not always give complete and permanent protection against itself. By this time John Hunter was dead, and there was no one of his experience and acuteness with whom Jenner could discuss the matter.

Jenner therefore set out to show that cowpox protected against smallpox, and also that cowpox could be transmitted from one human being to another just as smallpox could.

There should be no misconception of what was in Jenner's mind. Though his arguments and deductions are possibly not too well expressed, his line of thought clearly was constructive and of considerable originality. It was one thing to show that a person who had had a natural attack of cowpox was thereafter possessed of considerable immunity to smallpox.

FIG. 2.—Chantry Cottage, Berkeley, in which Jenner lived most of his life and died.

EDWARD JENNER (1749 - 1823)



This is a photograph of the original pastel portrait (now in the Wellcome Historical Museum) made by J. R. Smith in 1800 and exhibited in the Royal Academy in that year. It is now reproduced for the first time by the courtesy of the Museum.

Cowpox was a disease of cows, and only a fraction of the population ever has any direct contact with these animals. Furthermore, cowpox was present only in certain counties of England, and only at intervals. It was quite another thing to set out deliberately with the intention of showing that cowpox, naturally acquired, could be transmitted artificially *from person to person* so that there would result an increasing reservoir of persons who had been given the opportunity of becoming invulnerable—or "immune," as we would say—to smallpox. There is no doubt that this was what was in Jenner's mind. At a later date opponents of his views put forward counter-claims to priority. For example, there was the case of Benjamin Jesty, a farmer who twenty years before had inoculated his wife and children with cowpox to prevent them from contracting smallpox. But Jesty had no notion of perpetuating the cowpox from one individual to another. This was the cardinal factor in Jenner's doctrine, and it was an idea which had probably not occurred seriously to anyone before; at least, no one had ever attempted to put it into practice.

Once this point is clearly grasped certain interesting questions arise. To show the pitfalls in Jenner's path it is sufficient to take one example. Only a few months after the publication of his famous book Jenner sent to a friend in London some lymph from the cowpox vesicle on a child's arm. The lymph was dried and preserved in a quill. Before long people were discussing the methods of transmitting lymph to a distance—dried on lancets, and in other ways. If lymph from the human pock could be stored and transmitted in this way, why could not lymph from the pock on the cow? After all, this is essentially the method which we use to-day. The answer appears to be that Jenner was impressed early in his investigations by the fact that there are two types of cowpox in the cow—the true disease, and another form which he called "spurious cowpox." We now know that this view is wrong; but Jenner believed it, and he also believed that the spurious type does not give immunity to smallpox. On the other hand, true cowpox in the human bred true. He was therefore afraid that if the practice of using dried lymph from cows was widely adopted numerous failures might result. There was also the possibility that septic diseases might be transmitted or that the lymph might be taken at the wrong time. Difficulties of this type must have caused Jenner much reflection—and are ignored by many who are wise 150 years after the event.

The Inquiry

In May, 1796, Jenner found that the dairymaid Sarah Nelmes had a "typical" cowpox lesion on her finger, and on the 14th of the month he inoculated the boy James Phipps with matter from this lesion. The local result was similar to that following variolous inoculation. On July 1 Jenner inoculated the boy with matter from a case of smallpox. The inoculation was unsuccessful. Jenner drew up in 1797 a short treatise embodying his results, and it was presented unofficially to the President of the Royal Society (Sir Joseph Banks). Two manuscripts of this first draft are in existence—one in the Royal College of Surgeons and the other in the Wellcome Historical Museum. The paper was refused, and Jenner, in the following spring added further material and published the work privately in July, 1798. The book bears the title: *An Inquiry into the Causes and Effects of the Variolae Vaccinae, a disease discovered in some of the Western Counties of England particularly Gloucestershire, and known by the name of the Cow Pox.* A second edition was published in 1800 and a third in 1801. The work was also translated into many languages.

After the publication of this work Jenner spent three months in London (1798) looking for volunteers for vaccination. In this he was quite unsuccessful. But he left in the hands of Henry Cline, the surgeon, the quill of dried lymph referred to above. Cline used it as a measure of counter-irritation in a case of hip disease, and found that the patient had become immune to inoculated smallpox. From this case the practice of vaccination began to spread. Very soon a difficulty arose, since Dr. Woodville had been distributing lymph derived from vaccinations carried out at the smallpox hospital, and not unnaturally it produced mild smallpox eruptions. Dr. Pearson, a fashionable physician, had taken up vaccination enthusiastically, and in 1800 he proposed to establish an institution for gratuitous vaccination. Jenner was offered the post of "Extra Consulting Physician." From this and other incidents it was apparent that Pearson was trying to filch from Jenner the credit for the discovery. But events such as these could not rob him of the many honours which soon came to him, and which he received modestly but with due appreciation. Jenner spent some time in London in 1800, and he was then requested to vaccinate the 85th regiment, which he did personally.

About the same time the practice spread to the United States, where Professor Benjamin Waterhouse was largely instrumental in obtaining results. France, Spain, and the Mediterranean countries soon followed.

Jenner's Later Life

Vaccination was now becoming an established practice throughout the world, and Jenner was kept busy with a very voluminous correspondence. There is no doubt that his practice and his affairs had suffered as a result of his devotion to the cause which he had made. His friends advised him to petition Parliament for a grant, and in 1802, after a thorough inquiry, he was voted a sum of £10,000. In the following year he presided at the annual meeting of the Royal Jennerian Society, but a few years later its affairs were found unsatisfactory, and it was replaced by the National Vaccine Establishment. For a brief period he took a house in London and carried on a London practice. In 1806 Parliament again considered his case, voting him a sum of £20,000. Between that date and 1815, when his wife died, he resided at Berkeley and at Cheltenham. He now settled finally at Chantry Cottage, Berkeley—in which so much of his work had been done—and there he died on Jan. 26, 1823.

Epilogue

Jenner was indisputably the "discoverer of vaccination"—the promoter of the deliberate practice which he had been the first to envisage and to carry out. It is true that his *Inquiry* is a record of a very small number of cases and even fewer deliberate experiments. But an investigation must be judged by its results. The *Inquiry* led almost immediately to far more experiments in many countries than a regiment of individual investigators could have undertaken. When once the practice had been launched Jenner helped it forward in every possible way. He personally vaccinated individuals almost daily; in the early stages he attended meetings, and helped by interviews with all those in authority who could further his end—the abolition of smallpox. From 1798 until his death he carried on an extensive correspondence with scientists and physicians in many lands.

It may be considered a tragedy that Jenner in his first book maintained that cowpoxing—if properly carried out

—was an absolute and permanent preventive of smallpox, and he continued to maintain this view until the end. But it is possible that this indomitable assurance acted as a sheet-anchor to steady the bark in seas which were sometimes rough.

Of Jenner the man any country could be proud. To him fame came, at the age of 49, almost overnight, and he preserved a calmness and an equanimity which are much to be praised. Even in a country at war with Britain his name acted as a charm. At the end of the Treaty of Amiens two Englishmen were held in France, and were suffering from the effects of confinement. It was suggested that Jenner should write a letter to Napoleon asking for their release. This petition was read by Napoleon, who was about to refuse the request, when the name of the sender was pointed out to him. "Jenner!" said Napoleon. "We can refuse nothing to that man."

Certain celebrations were held on May 17 in connexion with this centenary. In the afternoon Sir Edward Mellanby gave an address at the Royal College of Surgeons on Jenner and his influence on research. In the late afternoon Sir Henry Dale opened an exhibition of manuscripts and relics of Jenner at the Wellcome Historical Medical Museum at 28, Portman Square; and in the evening a reception was held at the Royal College of Physicians.

EHRLICH'S ALDEHYDE TEST FOR UROBILINOGEN

BY

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Since Neubauer discovered in 1903 that the "mysterious substance" in urine described by Ehrlich as reacting with his aldehyde reagent was urobilinogen, the aldehyde test has come into routine use as an aid to diagnosis and prognosis in haemolytic anaemias and liver disease.

One of us (L. S. P. D.) has used this test for 25 years and has repeatedly stressed its value in lectures to undergraduate and postgraduate students. The investigation described below and a detailed study of the literature on tests for urobilinogen were undertaken as a direct result of a recent experience which gravely shook his confidence in the value of Ehrlich's aldehyde test.

A colleague in London, who was under his care for severe and prolonged infective hepatitis, had been instructed to test his urine with Ehrlich's aldehyde reagent at regular intervals and to keep a record of the findings. This record, together with other information, was sent to Edinburgh to enable progress to be assessed between consultations in London. The reaction for urobilinogen was strongly positive during the early stages of the disease, becoming weaker as the severity of the hepatitis steadily increased, and later becoming strongly positive when improvement began after three months' illness. Coincident with clinical recovery, the reaction again became weaker and finally negative. After a further three months, when the patient appeared to have made a complete clinical and biochemical return to normal, he reported that his urine again showed a red colour when tested with Ehrlich's aldehyde reagent. This made him doubt the value of the test, so he proceeded to repeat it on samples of urine from various members of his household. In each case a positive reaction was obtained, the colour appearing rapidly and being indistinguishable from that obtained for urobilinogen. One of us (L. S. P. D.), having personally checked these findings, decided to investigate the matter further. The firm from which the patient had obtained his bottle of reagent was Savory and Moore, who have co-operated with us in every way by supplying information and samples of reagent.

It is right to point out at this stage that the reagent supplied by Savory and Moore to us and subsequently tested repeatedly was entirely satisfactory. The false positive reactions obtained by our patient were undoubtedly due to the presence of some oxidizing agent which had developed spontaneously or had been introduced accidentally into the bottle of reagent. The fact that this could occur was in itself an indication of the need for investigation into Ehrlich's aldehyde test.

Ehrlich's aldehyde reagent, which consists of a solution of paradimethylaminobenzaldehyde in hydrochloric acid, has been used by many workers, but, as may be seen from Table I, there have been considerable differences in the composition of the reagents used and in the relative quantities of reagent and urine employed. With the various reagents in current use the final concentration of hydrochloric acid varies between 0.35 and 2.5% (excluding Watson's reagent, in which the hydrochloric acid is immediately neutralized by sodium acetate).* The final concentration of paradimethylaminobenzaldehyde varies between 0.06 and 0.6%. Terwen (1925) in his studies of urobilinogen used an ethereal solution of benzaldehyde. In the Royal Infirmary, Edinburgh, Ehrlich's rosindole reagent was issued many years ago for the urobilinogen test, and the wards have continued to use it with apparent satisfaction. This reagent was originally designed for testing indole formation by *Bacterium coli* and other organisms, and its composition is as follows: paradimethylaminobenzaldehyde, 4 g.; absolute alcohol, 380 ml.; and concentrated hydrochloric acid, 80 ml.

TABLE I.—*The Composition of Various Aldehyde Reagents and the Quantities of Reagent and Urine Employed*

Origin or Type of Reagent	Quantity of Benzaldehyde in Reagent (%)	Quantity of HCl in Reagent (%)	Volume of Reagent Used (ml.)	Volume of Urine Used (ml.)	Final Concentration of Benzaldehyde (%)	Final Concentration of HCl (%)
(a) Reagents used by other workers:						
Watson (1944)	0·28	22	2·5	2·5	0·14	11*
Naumann (1936)	1·0	·36	0·15	2·0	0·07	2·5
Wallace and Diamond (1925)	2·0	20	1·0	10·0	0·18	1·8
Farmer (1937)	2·0	18	1·0	10·0	0·18	1·6
Sparkman (1939)	6·6	18	1·0	10·0	0·60	1·6
Hutchison and Hunter (1940)	2·0	5	1·0†	3·0†	0·50†	1·1†
Chamberlain (1947)	3·0	18	0·1†	5·0	0·06†	0·35†
(b) Reagents tested in present investigation:						
Savory and Moore	2·0	18	0·5	5·0	0·18	1·6
Ehrlich's rosindole	0·87	0·6	1·0	5·0	0·14	1·1

* Immediately neutralized by sodium acetate.
† Approximate figures only, as authors stated quantity in "drops."

*The percentages for hydrochloric acid concentration in Table I refer to the concentrations of hydrogen chloride calculated on the basis that concentrated hydrochloric acid represents a saturated aqueous solution (approximately 36% w/w) of hydrogen chloride.

In current British textbooks of clinical chemistry the aldehyde test for urobilinogen is not discussed in detail. Some authors prefer spectroscopy of the urine or the Jaffé-Schlesinger test for urobilin.

A study of the specialized literature on the subject reveals references to the lack of specificity of the aldehyde test, there being numerous substances other than urobilinogen which can give colour reactions with paradimethylaminobenzaldehyde. In addition, the detection of urobilinogen may be inhibited or masked by normal or abnormal constituents of urine. Interfering substances are listed in Tables II and III.

TABLE II.—*Substances which are said to give rise to False Positive Results with Ehrlich's Aldehyde Reagent*

Detectable at Room Temperature	Detectable Only After Heating	Positive Reaction with HCl Alone
Porphobilinogen Protein derivatives Phenazone Indole	Phenol Tryptophan Phenacetin Morphine	Urorosein Urofuscin Pyridium Phenylhydrazine Oxidizing agents added to urine

TABLE III.—*Substances which are said to be Capable of Inhibiting or Masking Ehrlich's Aldehyde Reaction*

Inhibitors	Masking Substances
Other aldehydes (e.g., formaldehyde, acetaldehyde) Hexamethylenetetramine Albumin Serum Mucus Excess alkali or acid Unknown substances in normal urine	Indican Urea Bilirubin Sulphonamides Extract of senna Rhubarb extract

Since the finding of urobilinogen in the urine is of definite clinical importance it is essential that the test for its detection should be simple and reasonably specific. It should not be so sensitive that it detects the amount of urobilinogen normally present in urine, nor so insensitive that it fails to show the presence of urobilinogen in amounts greater than normal. In view of the considerable variation in the reagents used by other workers and of the possible importance of substances interfering with the reaction, it was decided to investigate Ehrlich's aldehyde test.

The following points were studied: (1) The optimum conditions for the detection of urobilinogen in the urine with regard to temperature, age of the specimen, and composition of the reagents used. (2) The importance of substances in urine other than urobilinogen which may give rise to a red or pink colour with Ehrlich's aldehyde reagent. (3) The significance of factors likely to mask or inhibit the aldehyde reaction. (This aspect is not dealt with in the present communication.)

Three reagents were compared in this investigation: (*a*) the preparation in present use at the Royal Infirmary, Edinburgh—Ehrlich's rosindole reagent; (*b*) an aldehyde reagent supplied by Messrs. Savory and Moore; and (*c*) Watson's reagent.

As a preliminary to the investigation the amounts of rosindole reagent and Savory and Moore's reagent were determined which would produce the maximum colour reaction with 5 ml. of urine known to contain urobilinogen. The optimal amounts of reagent and urine used were determined from 40 tests carried out on 10 urines containing urobilinogen, and these quantities are shown in Table I. While these estimations were being made the following incidental points were noted:

1. Addition of excessive quantities of Savory and Moore's reagent inhibited the urobilinogen–aldehyde colour reaction. This was presumably due to the destruction of urobilinogen by excessive amounts of hydrochloric acid.

2. When the tests were conducted at room temperature (14–18° C.) the colour change on naked-eye estimation reached maximum intensity in three to five minutes. On the other hand, when the tests were conducted at 35° C. the speed of the reaction was increased, maximum colour change developing in half to one minute, and the colour was more intense than at room temperature.

3. Addition to the urine of varying amounts of a saturated aqueous solution of sodium acetate immediately after the rosindole or Savory and Moore's reagent accelerated the development of the colour in every case but did not increase its final intensity.

Watson's test was carried out according to the author's instructions—namely, the addition of 2.5 ml. of Watson's aldehyde reagent to 2.5 ml. of urine, followed immediately by 5 ml. of a saturated aqueous solution of sodium acetate (Watson *et al.*, 1944). The reader is referred to Watson's notable work on the metabolism of urobilin and particularly to his methods for quantitative estimation of urobilinogen in faeces and in urine. The present communication, however, is concerned only with simple clinical qualitative tests for the detection of urobilinogen in the urine.

The urines of 100 unselected ward patients were investigated in a variety of ways. The specimens were examined (*a*) within one hour of voiding, (*b*) about 18 hours after voiding, (*c*) at room temperature (14–18° C.), and (*d*) at 35° C. They were subjected to the following tests:

(i) Addition of the optimal amounts of rosindole reagent as shown in Table I.

(ii) Addition of the optimal amounts of Savory and Moore's reagent as shown in Table I.

(iii) Watson's test as described above.

(iv) Addition of Watson's reagent, 2.5 ml. to 2.5 ml. of

TABLE IV.—*Number of Urines giving Colour Reactions with Aldehyde Reagents and Hydrochloric Acid*

Reagent		"Fresh" Urines						"Old" Urines					
		Room Temperature			35° C.			Room Temperature			35° C.		
		Total	Col. $CHCl_3$	Insol. $CHCl_3$	Total	Sol. $CHCl_3$	Insol. $CHCl_3$	Total	Sol. $CHCl_3$	Insol. $CHCl_3$	Total	Sol. $CHCl_3$	Insol. $CHCl_3$
(i) Rosindole	A	20	20	Nil	29	28	1	11	11	Nil	14	14	Nil
	B	10	10	Nil	16	15	1	6	6	Nil	7	7	Nil
(ii) Savory and Moore	A	20	20	Nil	28	28	Nil	11	11	Nil	14	14	Nil
	B	10	10	Nil	15	15	Nil	5	5	Nil	7	7	Nil
(iii) Watson's plus acetate immediately	A	11	11	Nil	15	15	Nil	5	5	Nil	5	5	Nil
	B	6	6	Nil	8	8	Nil	3	3	Nil	5	5	Nil
(iv) Watson's plus acetate after 15 min. delay	A	21	15	6	32	18	14	27	15	12	29	16	13
	B	11	6	5	19	8	11	17	6	11	18	7	11
(v) 22% HCl (A.R.)	A	12	0	12	66	3	63	46	2	44	71	9	62
	B	9	0	9	62	1	61	38	1	37	60	1	59
(vi) 22% HCl (*B.P.*)	A	77	6	71	—	—	—	82	7	75	—	—	—
	B	71	2	69	—	—	—	78	4	74	—	—	—
(vii) 22% HCl (A.R.) plus H_2O_2	A	89	7	82	—	—	—	86	8	78	—	—	—
	B	82	2	80	—	—	—	81	2	79	—	—	—

A = Total colour reactions of all hues. B = Total pink or red colours observed.

urine, with a delay of 15 minutes before adding the acetate solution.

(v) The addition of hydrochloric acid of analytical quality, 2.5 ml. of 22% aqueous solution to 2.5 ml. of urine. Hydrochloric acid of this standard of purity is subsequently referred to in the text as hydrochloric acid A.R.

(vi) The addition of hydrochloric acid, corresponding in quality to the standards laid down in the *British Pharmacopoeia*, in the same concentration and proportions as in test v. Hydrochloric acid of this standard of purity is subsequently referred to in the text as hydrochloric acid *B.P.*

(vii) The addition of hydrochloric acid of analytical quality as in test v, together with small amounts of an oxidizing agent, hydrogen peroxide.

All the aldehyde reagents used were made up with reagents of analytical quality. In tests v, vi, and vii large amounts of hydrochloric acid were used (actually equal to the amount in Watson's test), as it was thought that colour reactions due to substances other than urobilinogen would be more likely to appear at this high level of acidity. It is well known that the pigment produced by the urobilinogen–aldehyde reaction is soluble in chloroform. Accordingly, all the specimens were extracted with chloroform after submission to the tests described. A total of 5,600 tests were carried out on the 100 urines. The results are shown in Table IV.

A study of Table IV indicates the following points:

1. Out of the 100 urines tested 29 gave colour reactions of varying hues with Ehrlich's rosindole reagent, Savory and Moore's reagent, or Watson's test. A pink or red colour, however, was obtained in only 16 urines.

2. Colour reactions with all aldehyde reagents were more readily demonstrated at 35° C. than at room temperature.

3. Colour reactions with aldehyde reagents were more readily demonstrated in fresh than in old urines.

4. Delay in addition of acetate to specimens tested with Watson's reagent resulted in a considerable increase in the appearance of colouring substances insoluble in chloroform. This phenomenon was noted by Kelly *et al.* (1946). It was obviously due to colour reactions induced by the large amount of hydrochloric acid present in Watson's reagent which had not been neutralized until 15 minutes later.

5. Substances giving colour reactions with hydrochloric acid alone were more readily demonstrated in warm urines than in cold urines, and this applied both to fresh and to old specimens.

6. Of the 100 urines tested at room temperature with 22% hydrochloric acid A.R., 9 specimens gave a pink colour not extracted by chloroform, whereas when the same urines were tested under the same conditions with hydrochloric acid *B.P.* 69 gave a pink colour not extracted by chloroform. A similar high incidence of colour changes was noted when hydrochloric acid A.R. was added to the urines in the presence of a small quantity of hydrogen peroxide. From this it may be assumed that the principal impurity in hydrochloric acid *B.P.* leading to colour reactions is an oxidizing agent, and indicates the essential need for using hydrochloric acid A.R. in making up the Ehrlich aldehyde reagent. The substance which gives rise to a pink or red colour following the addition of impure hydrochloric acid to urine, and which is insoluble in chloroform, is believed to be an indole derivative, urorosein (Meiklejohn, 1948—personal communication). The production of urorosein depends both on the presence of an oxidizing agent and on the strength and quantity of hydrochloric acid used in the test. The high incidence of chloroform-insoluble pink substances observed when the addition of acetate was delayed in Watson's aldehyde test can possibly be explained on this basis.

In a previous investigation of the Ehrlich aldehyde test a different series of 45 urines had been tested with the rosindole reagent. Twenty positive colour reactions were recorded, and in six instances the colour observed, although macroscopically indistinguishable from that produced by urobilinogen, was not extracted by chloroform. Thus in one-third of cases this reagent gave false positive results. On inquiry it was found that hydrochloric acid *B.P.* had been used in making up the reagent, as no instructions had been given to use analytical reagent. When the tests were repeated with rosindole reagent containing hydrochloric acid A.R. no colouring substances that were insoluble in chloroform were obtained.

Terwen (1925) and Watson (1931, 1936) have pointed out that the rapid conversion of hydrochloric acid to acetic acid by the addition of sodium acetate inhibits colour reactions due to indole. This procedure apparently also inhibits colour reactions due to indirubin. Thus when Watson's test is carried out the only important substances apart from porphobilinogen contributing to colour reactions are unidentified compounds having in general the same clinical significance as urobilinogen. The 15 urines which had given pink or red colour substances soluble in chloroform with rosindole reagent and Savory and Moore's reagent were accordingly submitted to the following procedure: 0.5 ml. of Savory and Moore's reagent was mixed with 5 ml. of urine followed immediately by 1 ml. of a saturated aqueous solution of sodium acetate. If a red or reddish-pink colour developed urobilinogen was considered present in an abnormal amount. In two of the 15 urines the colour reaction was inhibited and therefore the pink colour originally observed in these specimens was due to substances other than urobilinogen. In both instances the colour reactions had been only weakly positive, the colour change in one being perceptible only at 35° C., and in the other after several minutes at room temperature and at 35° C. This would suggest that weak delayed colour reactions with aldehyde reagents should be discarded as negative. The suggested lowest criterion of positivity is the development of a definite reddish-pink colour within five minutes at room temperature or within one minute at 35° C.

TABLE V.—*A Comparison of Typical Colour Reactions Obtained from 100 Urines with the three Aldehyde Reagents Tested*

Reagent	Temperature	Positive Results	Urobilinogen Proved Present	False Positive Results
Rosindole ..	14–18° C.	10	9	1
	35° C.	15	13	2
Savory and Moore's	14–18° C.	10	9	1
	35° C.	15	13	2
Watson's ..	14–18° C.	6	6	0
	35° C.	8	8	0

Table V gives results which enable the sensitivity of the three tests to be compared. It shows that tests with Ehrlich's rosindole reagent and Savory and Moore's reagent are more sensitive, although less specific, than Watson's test when read by the naked eye. The reduced sensitivity in Watson's test must be due in part to the threefold dilution of the urine with reagents.

The substances which are most likely to give rise to a reddish-pink colour when urine is tested with Ehrlich's aldehyde reagent are urobilinogen, indole, the precursors of two indole pigments—indirubin and urorosein—and porphobilinogen. Urorosein and porphobilinogen–aldehyde are insoluble in chloroform. The other pigments produced are soluble in chloroform. If the hydrochloric acid employed in the reagent is pure and free from oxidizing agents, and the reagent is used in small amounts, or if, as in Watson's test, the acid is immediately neutralized with sodium acetate, the reddish-pink colour developing in urine is unlikely to be due to any substance other than urobilinogen. Since, however, it is never possible to be certain that excessive amounts of hydrochloric acid or impure acid have not been used in making up the aldehyde reagent, and since the latter may become contaminated

with oxidizing substances, it is essential that the red or reddish-pink colour developing in the test should invariably be submitted to chloroform extraction. By this means the most important single fallacy—namely, a pink colour due to urorosein—can be excluded. If it is suspected that the substance giving rise to a pink colour soluble in chloroform is not urobilinogen (an exceptional finding if the reagents are properly prepared and if very weak delayed colour reactions are disregarded), then a saturated solution of sodium acetate should be added immediately after the aldehyde reagent to ensure the specificity of the test.

Conclusions

Ehrlich's aldehyde test is a simple and valuable clinical procedure for the detection of abnormal amounts of urobilinogen in the urine. The reaction is more sensitive if urines are tested in the fresh and warm state.

The following precautions should be rigidly observed: (1) The hydrochloric acid in the test reagent should be of analytical standard and used in appropriate amount. (2) The reagent should be put out for use in small drop-bottles, and contamination with pipettes, etc., should be avoided. (3) The reaction should be considered negative unless a definite reddish-pink colour develops within five minutes at room temperature or within one minute at 35° C. (4) Chloroform extraction should be undertaken in every urine giving a red or reddish-pink colour subsequent to the addition of aldehyde reagent. (5) Sodium acetate solution should be added immediately after the addition of Watson's reagent if Watson's test is employed. The addition of sodium acetate is unnecessary if Savory and Moore's reagent is employed in the amount used in these experiments. (6) The reagent should not contain alcohol, as this is unnecessary and more likely to produce false positive results with indole.

Further work is required to determine the optimal quantities of paradimethylaminobenzaldehyde and hydrochloric acid to be included in reagents used for qualitative estimation of urobilinogen and the relative amounts of reagent and urine to be employed in the test. Having been determined, these quantities should be strictly adhered to, as by this means the inhibition of specific urobilinogen colour reactions and the production of colour reactions due to indoles and other unknown substances will be reduced to a minimum.

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The Minister of Health has decided, after consultation with the Central National Health Service (Chemist-Contractors) Committee, that the use by contractors of envelopes or other paper containers for tablets, pills, capsules, pastilles, lozenges, and for bulk powders is undesirable, and that they should not be used for this purpose after May 1, 1949. The British Standards Institution is considering minimum standard requirements for cardboard or paperboard containers. Until the inclusion in the Drug Tariff of a reference to these requirements, boxes used for a small number of tablets, pills, etc., must be large enough to bear a label on which the directions can be clearly shown.

RETENTION OF URINE*

BY

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Among the many possible causes of inability to pass urine prostatic obstruction is the most frequent in everyday practice. Paralytic or neurogenic causes occupy second place, and stricture nowadays comes third because its principal cause, gonorrhoea, is more effectively treated. Retention from prostatic obstruction can be taken as the example for description, but the same principles of treatment are applicable to other cases.

Retention implies a full bladder from which either nothing can be passed, as in acute retention, or only a dribbling overflow escapes, leaving a large amount of residual urine, as in chronic retention. It must be distinguished from the more serious condition of suppression of urine in which the bladder is empty. It is therefore necessary at the outset to be able to recognize a full bladder, and to do it without having to pass a catheter, the method recommended in some gynaecological textbooks. It is generally easy by ordinary clinical methods. There is a rounded or irregular swelling arising from the pelvis, fixed below, dull on percussion, cystic, either tense or soft, and sometimes translucent from side to side. In cases of doubt examination with the foot of the bed raised will occasionally make it more evident. Sometimes, however, there are difficulties, especially in a fat patient, and particularly where there are no urinary complaints and the condition is not suspected.

A man of 64 went to his doctor complaining of general ill-health, with loss of weight, morning vomiting, and loss of taste. He had no urinary symptoms and did not have to get up at night to micturate. He was sent for a complete barium-meal examination, and the radiologist discovered a pelvic tumour, outside the bowel but pushing it up. The tumour was an enlarged bladder. The prostate was moderately enlarged and the blood urea was 84 mg. per 100 ml., the urine having a specific gravity of 1002. After the bladder had been gradually decompressed through a small suprapubic catheter his symptoms ceased, the blood urea fell to 30 mg. per 100 ml., and after prostatectomy he recovered.

Clinical Types of Retention

Acute Retention.—There is often no sharp dividing-line between acute and chronic retention, and while the amount of residual urine is generally large in chronic retention this factor alone does not give a complete definition. Acute retention is of sudden onset and is painful. It follows congestion and is brought about by cold, wet, and alcoholic, dietary, or sexual excess. Brodie in 1822 said: "The exciting cause is sometimes cold. One gentleman will be affected after drinking punch, another after drinking more wine than usual. One gentleman I knew was seized after two or three days' costiveness. The cause is often too minute to be detected." Other potent causes of acute retention are enforced holding of urine when the call comes and confinement to bed for some intercurrent disease such as bronchitis, pneumonia, or heart failure. A painful acute retention may be superimposed on a degree of chronic retention. The clinical picture of acute retention is unmistakable: there is a constant urge to micturate, but inability to expel more than a few bloody drops, with severe pain in the penis and lower abdomen, restless changes

*Based on a lecture given to the Leeds Branch of the British Medical Association on Feb. 9.

of posture, sweating, and apprehension. The relief when the bladder is emptied is dramatic.

Chronic Retention.—By contrast chronic retention is relatively painless, although there is sometimes a history of loin pain, and the patient may have no idea that he has an abdominal swelling. The term "chronic" denotes that the condition has been present for a long time; the bladder has become gradually distended and is decompensated; it can be detected on clinical examination, and other symptoms such as have been mentioned will probably be present; loss of weight and alteration in the sense of taste are frequent signs of uraemia. Chronic retention is the more dangerous state of the two.

Treatment of Acute Retention

From the general practitioner's point of view the treatment of acute retention consists in relieving the pain of retention and sending the patient into hospital. The retention, and the consequent pain, can be relieved in more than one way.

A hot bath and a morphine suppository (½ gr.—32 mg.).—This is not always possible, and is seldom successful in prostatic cases. It is more likely to succeed in retention from stricture, where the congestive element plays a large part.

Catheter.—This is the time-honoured method, and it is still correct provided that gentleness and strict asepsis are maintained. A gum-elastic bicoudé catheter is more likely to pass easily than a soft rubber one; the silver prostatic catheter should not be used. A fairly stiff rubber catheter of the Tiemann type is effective, and it can be boiled.

Aspiration.—A serum or lumbar-puncture needle is inserted under local analgesia through the abdominal wall into the bladder and the urine withdrawn by a syringe. The needle should be inserted well above the symphysis pubis and should be directed obliquely downwards and backwards (Fig. 1). This procedure can be repeated if absolutely necessary, but the needle should be inserted in a slightly different spot and the bladder should not be allowed to fill up as much as before. Aspiration is less likely to introduce infection than is the passage of a catheter. The danger lies in repeated catheterization, and even when sulphonamides are given, as they should be, catheterization under home conditions is almost certainly followed by infection if continued for more than two days. An indwelling catheter increases the certainty of infection, which in a closed bladder may cost the patient his life.

FIG. 1.—In emptying a distended bladder by aspiration the needle is directed downwards and backwards.

Carbachol is unlikely to relieve retention when there is mechanical obstruction.

After the relief of acute retention micturition approaching the normal may be re-established, but the patient should still be sent into hospital. One attack of acute retention is the precursor of others and is an indication for prostatectomy before the condition becomes chronic. If micturition is not re-established the condition is more urgent and the man who has had repeated catheterization becomes a bad subject for prostatectomy.

Treatment of Chronic Retention

It is of fundamental importance to realize that the bladder should not be emptied just because it is found to be full. Although it may be done with impunity on many occasions, there is always the risk of producing renal haematuria and suppression of urine, even if infection is not introduced. The patient should be sent into hospital without undue delay; the condition has probably been present for some time, and a day or two more may make little difference, but the sooner treatment is instituted the better. Under proper surroundings the surgeon is faced with the decision of draining the bladder first or of doing an "immediate" prostatectomy after a minimum of time in assessing renal function and preparing the patient. The important principles to be followed in drainage are to avoid sudden decompression, to avoid urethral trauma, to prevent infection, especially ascending infection, and to plan ahead. I am a firm believer in preliminary drainage in chronic cases provided it is carried out in such a way as not to prejudice the subsequent prostatectomy.

There has recently been a tendency to make light of the dangers of sudden emptying of the bladder in chronic retention, but cases of suppression of urine from this cause still appear only too often. If there is hydronephrosis and hydroureter the release of pressure affects the upper urinary tract as well as the lower. The renal blood vessels have become adapted to an increase of pressure, and when it is suddenly released intrarenal haemorrhage may follow, leading to tubular blocking.

Preliminary decompression and drainage may be carried out by urethral catheter, by urethrostomy, by suprapubic cystostomy, or by suprapubic catheterization.

Urethral Catheter

This is the simplest method of drainage and allows of slow decompression. If it could be forecast with certainty that it would not be required for more than two days it would be relatively safe. A rapid estimation of renal function is necessary before it is used; the blood urea figure does not show minor degrees of renal impairment, but a high value—for example, over 80 mg. per 100 ml.—is an indication of renal damage and generally means that a longer period of drainage will be necessary before prostatectomy. A persistent specific gravity of the urine of about 1010 is also an index of severe renal insufficiency. These are the tests of most practical value when time is a factor. Even a short period of catheterization, however, is followed by urethritis, and this may lead to prostatitis, cystitis, and finally to pyelonephritis from ascending lymphatic infection.

Wilson Hey (1945), who has done so much to make urologists conscious of the dangers of infection, is opposed to any form of urethral instrumentation before prostatectomy. The added danger of urethral trauma is also present. If a urethral catheter is used it must be of good rubber and must be small enough to allow of free drainage around it; even a catheter of suitable size may produce a meatal stricture.

Urethrostomy

Sandrey (1949) has drawn attention to the value of drainage by a catheter inserted from the bulb of the urethra, and he finds great advantages in the dependent drainage achieved over the uphill drainage of suprapubic cystostomy. In a series of 58 poor-risk cases there was a mortality of 8.6% and there were no deaths from urinary infection. The method has obvious advantages, but it still leaves one-third of the urethra exposed to the friction of a catheter. It is not so easy to keep the patient ambulant—an important feature during the period of drainage—and there is a leak lasting from four to five days after removal of the catheter. There are also possible nursing difficulties.

Suprapubic Cystostomy

While drainage is effective, the decompression by this operation is not always gradual. The main disadvantages, however, are in the frequent leakage around the catheter and in the scarring of the operation field for the prostatectomy; this is especially so when the tube is placed low on the abdominal wall, as is so often the case. The low suprapubic tube, entering

just above the symphysis and passing horizontally into the bladder from the lower end of a long vertical incision, is something which should be banned from modern surgery. It leaks, it smells, and it makes a clean prostatectomy impossible (Fig. 2).

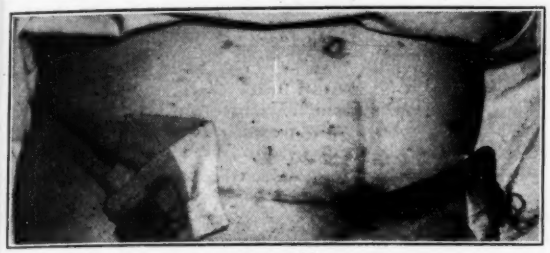

FIG. 2.—Low suprapubic cystostomy.

Suprapubic cystostomy as a first stage of prostatectomy has a high mortality. Rees (1947) reported 30 deaths in 106 cases so treated—a mortality of 28%, of which more than one-half were infective. He also recorded 18 deaths during gradual decompression by urethral catheter.

Suprapubic Catheterization

The method devised originally for cases of spinal injury with bladder paralysis (Riches, 1943) has now been used extensively for decompression and drainage of the bladder in chronic retention. A small rubber suprapubic catheter (16 F.) is inserted by a special trocar, the catheter itself acting as the cannula. It gives a watertight fit and can be advanced to the base of the bladder by an internally expanding advancer (Fig. 3). It is inserted obliquely downwards and backwards,

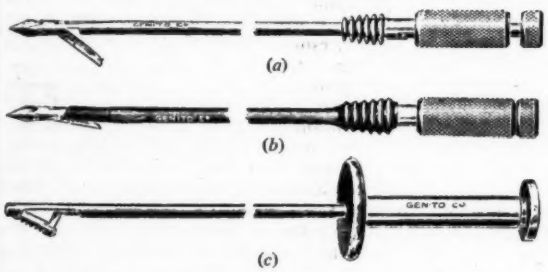

FIG. 3.—(*a*) The suprapubic catheter introducer. (*b*) The catheter stretched on the introducer. (*c*) The advancer.

starting from the highest point of bladder dullness or the mid-point between the umbilicus and the symphysis, whichever is the lower. If there is any doubt about the fullness of the bladder a small incision is made at the same point and the instrument and catheter are inserted under direct vision. The catheter is held in place by a loop stitch through the skin, the ends of which pass twice around the catheter (Fig. 4); a small rubber shield held on by a strapping corset serves to retain a dressing around it and prevent movement. Kidd's U-tube has been found the most effective method of decompression, which is completed in 12 hours, after which the patient can get up if other conditions permit. The danger of injury to the peritoneum is minimal if the bladder is distended, as is the case when the operation is needed, and as an added safeguard the foot of the bed or operating table is raised during the insertion. When the bladder contains ¼ pint (425 ml.) there is usually a bare area devoid of peritoneum for 3 in. (7.5 cm.) above the symphysis.

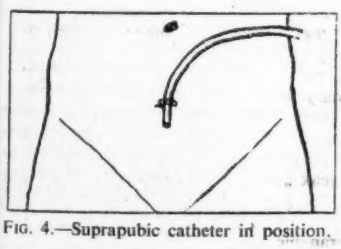

FIG. 4.—Suprapubic catheter in position.

This method fulfils all the suggested principles of treatment: decompression is slow; there is no urethral instrumentation; ascending infection is avoided, as there is no direct lymphatic pathway from the track of the catheter to the kidney; and the field for the second operation is left intact. It can be done safely under a local anaesthetic however ill the patient, it is leak-proof, and it can be prolonged as long as necessary. If the drainage has to be maintained for more than two weeks the catheter is changed on the fourteenth day. The old one is removed, and an open-end rubber catheter of the same or a larger size is immediately passed along the track. There must be no delay about this, as the fistula closes rapidly owing to its obliquity; after prostatectomy it closes spontaneously in a few hours, and it is exceptional for it to leak. There has been no apparent disadvantage from the "uphill" drainage, and the bladder urine has often remained sterile for a fortnight. Where renal function can recover it will do so, and the improvement in appetite and general well-being is often remarkable. The blood chemistry gives an indication of the need and type of intravenous fluids.

During the five years 1943–8 I have used this method for the drainage of chronic retention in prostatic obstruction in 227 cases; there were 12 deaths—a mortality of 5.2%—and none were from urinary infection. If three cases in which the drainage was purely palliative—in patients dying from heart failure or advanced carcinoma—are excluded the mortality was 4%, and if those who had never been catheterized or cystoscoped could be excluded it would be 2.6%. There will always be a mortality in dealing with these patients by whatever method, and it is remarkable how they get along so well until they are subjected to surgical intervention.

Immediate Prostatectomy

There is no doubt that the benefits of preliminary drainage have in the past made surgeons too cautious about prostatectomy in one stage; there are still those who practise a two-stage operation in every case. Their results in terms of mortality are excellent, but in playing for safety they lose many advantages. The modern dry prostatectomy, by whatever route, is a vastly different procedure from the two-stage Freyer from which it has developed. There need be no suprapubic leak, the patient can be up on the second day, and the convalescence is smooth and relatively painless. The horrors and discomforts of the older operations are still vividly recalled, and have made the operation one which men dread and in consequence defer until something has to be done.

The work of Wilson Hey (1945) in stressing the importance of asepsis has done much to reduce the number of two-stage operations. He himself advises a one-stage operation, following his own technique in every case, whether retention is acute or chronic; his figures are instructive, showing a total mortality of 6% in all cases. Where the blood urea was below 80 mg. per 100 ml. it was only 3.4%; with a value between 80 and 200 mg. it rose to 16.1%, and over 200 mg. it was four out of six cases (66.6%). It is evident that whilst a one-stage aseptic operation is applicable to many cases there are also a number of bad-risk cases that will not survive it. Some of these cases with chronic retention and considerable renal damage can be saved by preliminary drainage.

In one patient with a blood urea of 420 mg. per 100 ml. suprapubic catheterization with slow decompression brought it down to 38 mg. after eight weeks' drainage, and he came safely through a Harris prostatectomy and made a good recovery; I do not think he would have survived a one-stage operation. His wound was dry on the day after the suprapubic catheter was removed and his convalescence was both comfortable and uneventful. By contrast a man with a blood urea of only 20 mg. per 100 ml. but with a chronic retention of 46 oz. (1.3 litres) died from uraemia

on the ninth day after a one-stage prostatectomy (retropubic), with a blood urea of 300 mg. I am therefore not a convert to a universal one-stage operation although I practise it whenever it seems safe to do so.

In an uncomplicated case the convalescence after a retropubic prostatectomy (Millin, 1945), or a Harris operation with closure, or a Wilson Hey prostatectomy can be as uneventful as that after an interval appendicectomy, and the mortality should not exceed 5%. When there is chronic retention of urine or much renal damage or gross infection preliminary drainage will give the patient a better chance of survival. Drainage by the small suprapubic catheter has proved a safe and satisfactory method, and it does not interfere with the full exposure required for any of the modern methods of prostatectomy.

If endoscopic resection is to be done the presence of the suprapubic catheter makes the operation much simpler, as continuous lavage can be employed to keep the field clear of blood. Where intercurrent cardiac, pulmonary, or other disease makes a long period of drainage necessary it gives the greatest chance of getting the patient fit for operation. In cases of bladder paralysis it allows for adequate drainage during the critical period and does nothing to prevent the return of voluntary micturition or the establishment of automatic micturition. Its main advantages lie in the high insertion of the catheter, the oblique track, and the absence of leakage.

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OGILVIE'S SYNDROME OF FALSE COLONIC OBSTRUCTION

A CASE WITH POST-MORTEM FINDINGS

BY

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A syndrome of large-bowel colic thought to be due to sympathetic deprivation was recently described by Sir Heneage Ogilvie (1948), with a report of two cases, including laparotomy findings but without the possibility of full confirmation of the suggested anatomical diagnosis by post-mortem examination. The case now reported had been operated on before the first description of Ogilvie's syndrome, and its striking similarity to the original two cases (particularly to Case 2) was immediately apparent. When the disease had run its inevitable and very short course a full and careful post-mortem examination was performed. This third case may therefore be considered worth recording.

Case Report

The patient, a tall lean fitter aged 56, had long suffered from constipation, but had otherwise been in good health and free from pain until three months before his admission to hospital. Since that time he had noticed that his constipation was becoming more and more stubborn, and he suffered repeated attacks of colicky lower abdominal pain without diarrhoea or vomiting. These symptoms became increasingly severe and were attended by a progressive loss of weight, which he could ill afford, until, after four days' absolute constipation and a day's vomiting, on Sept. 8, 1948, he was sent into hospital as a case of chronic large-bowel obstruction due to carcinoma, becoming acute.

Examination on admission showed a very thin, ill-looking man with an unhealthy muddy complexion, in obvious spasmodic pain. The abdomen was not at all distended generally, and the wall relaxed normally. There was a tender fullness corresponding to a distended caecum and transverse colon, but no lumps could be made out through the abdominal or rectal walls. Peristaltic sounds were exaggerated. The only other significant positive finding was a small area of consolidation at the base of the left lung. The speech was slow, slurry, perhaps slightly dysarthric, but otherwise the nervous system seemed normal. This examination made it clear that any obstruction was not complete, and an enema produced a constipated result and flatus, with relief of pain. On the following days the symptoms recurred, and, although distension was never present and flatus was passed spontaneously, defaecation could be induced only by enemata.

Plain radiographs of the abdomen and chest showed some increase in normal colonic gas shadows not amounting to a picture of true obstruction, an area of collapse at the base of the left lung, and an enlarged lower mediastinal shadow, interpreted as being due to a primary or secondary neoplasm obstructing the left lower bronchus, with secondary mediastinal glands. After some days in hospital the patient complained of dysphagia, which he said had been present for a few weeks, but very mildly, and was now becoming more noticeable. A barium swallow and *x*-ray screening showed some hold-up in the lower thoracic oesophagus, again thought to be due to a mediastinal new growth.

Follow-up of this barium seemed to indicate a complete hold-up in the pelvic colon, with gross colonic distension proximally. However, on further screening the radiologist reported that he did not think there was an organic obstruction at this level, and suggested a barium enema. Meanwhile the general condition and the morale of the patient were deteriorating, the severe pains continued, the bowels remained immovable, and there were repeated requests for any operation which offered a chance of relieving his symptoms. It was felt that even with a negative barium enema laparotomy would eventually be forced by these facts, although, in view of the chest condition, at best a very temporary palliation was all that could be hoped for.

Laparotomy was performed on Sept. 21 through a midline incision. Below the level of the gastro-hepatic omentum the whole abdomen was normal. The colon showed neither distension nor spasm. The liver was studded with secondary growths, and an apparently carcinomatous mass was palpable in the pre-aortic region about the level of the coeliac axis. A small piece of liver secondary was excised for microscopy and the abdomen closed. After operation the patient became more and more cachectic, a terminal chest infection appeared, and he died on Oct. 21, one month after operation.

Post-mortem Examination.—The primary lesion was found to be an extensive carcinoma of the left lower bronchus, with secondary glands in the mediastinum invading the oesophagus, a large secondary in the right lobe of the thyroid, multiple secondaries in the liver, and some secondaries in the pre-aortic region. The apex of the left and base of the right lung showed an acute tuberculous process, which presumably had hastened the end. Microscopically the growth was highly anaplastic, and consisted of sheets and cords of spherical cells with round pyknotic nuclei and very little cytoplasm. The splanchnic nerves were very carefully dissected throughout, and were found to be entirely free from any involvement in growth in their preganglionic course. On tracing down the connexions of the semilunar ganglion distally the mat of efferent nerve fibres leaving the left side of the ganglion passed direct into a carcinomatous mass, presumably deriving from an affected pre-aortic gland. After fixation this relation was even more striking and definite. The left vagus was probably involved by growth in the thorax, although visible as a normal nerve uninvolved by carcinoma below this level; the right was uninvolved throughout its course. The brain and meninges were normal.

Discussion

The similarity of this case to those in the original description needs no emphasis. After laparotomy in my case two explanations seemed possible: (1) colonic muscle imbalance caused by interruption of sympathetic pathways (stated thus vaguely, with none of Sir Heneage's precision), or (2) that

suggested by Cushing's demonstration of acute peptic ulcer due to spasmodic and incoordinated contractions of stomach muscle in the presence of vagal overaction and sympathetic paralysis caused by lesions in the hypothalamic region (Cushing, quoted by Bockus, 1944). In view of the suggestion of dysarthria, it was thought that cerebral secondaries might be present, one of which could be causing a similar disturbance of colonic innervation and function. This explanation disposes of the difficulty about sympathetic afferents mentioned by Ogilvie, and may be thought to remain a theoretical possibility. The lesion actually demonstrated bears out Ogilvie's speculations about causation very accurately, including his forecast of its post-ganglionic position, where the fibres are non-medullated and presumably more vulnerable. Clearly the syndrome can occur only where efferent sympathetics are affected and afferents spared. This fact perhaps accounts for its rarity, while malignant disease of coeliac and pre-aortic glands is all too common.

In the absence of post-mortem findings the original description suggested that the dysfunction lay in the left colon. The symptoms irresistibly suggest a lesion of the left colon *by analogy* with those of an obstructing cancer of that organ. But if the wasting, distension, colic, and constipation are not due to organic obstruction, they may as easily originate in the mid-gut as in the hind-gut. That in fact they do is suggested by the following points.

(1) The sympathetics demonstrably affected were the splanchnics; these supply the bowel nourished by the superior mesenteric artery. (2) A subdiaphragmatic lesion of the ganglionated sympathetic chain denervating the left colon should also denervate and cause vasodilatation in the left leg (Telford, 1948). This effect is not recorded in any of the extant cases. But none of the cases had any carcinoma sufficiently distal to interfere with the "lumbar splanchnics" or the inferior mesenteric plexus—i.e., the left colon's sympathetic supply after leaving the chain. Thus a sympathetic denervation of the left colon seems anatomically very unlikely. (3) In the present case a radiograph taken 48 hours after a barium swallow showed a colon dilated up to the splenic flexure (the lower limit of the mid-gut) and normal or spastic thereafter, and gross dilatation of a small-bowel loop in the position of the terminal ileum. The plain radiograph taken on admission shows substantially the same picture.

It seems certain, therefore, that in this case the dysfunction involved the lower ileum and proximal colon, and it is probable that this will be found to be a general rule.

If it is objected that sympathetic deprivation should cause spasm, not dilatation, it can be argued thus: (1) That, since all these cases were characterized by colic, spasm obviously occurs; the bowel is normally a rhythmic organ, and abnormal diastole may follow abnormal systole. (2) That the physiology of the human bowel's response to autonomic stimuli is still obscure, and its response to deprival of its sympathetic efferents while retaining sympathetic afferents much more so. (3) That, in this case, it is an experimental fact that a gross lesion of the sympathetic efferents to the mid-gut, in the presence of at least an intact right vagus, was followed by dilatation of the distal part of the mid-gut. (4) That more accurate study of further cases is needed before any final conclusion is possible.

Summary

A third case of Ogilvie's false large-bowel-obstruction syndrome is presented in which the primary lesion was a carcinoma of bronchus and there was post-mortem proof of carcinomatous infiltration of sympathetic post-ganglionic fibres below the semilunar ganglion. An alternative theory of causation of the syndrome is postulated, but it was proved incorrect in this case. Evidence suggests that the lesion affects the mid-gut rather than the hind-gut.

My thanks are due to Mr. H. O. Blauvelt for permission to publish this case, to Dr. Doel for the radiological opinions, and to Dr. Prendiville for the post-mortem and pathological findings.

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CHRONIC ILEUS CAUSED BY MALIGNANT INVASION OF THE POSTERIOR ABDOMINAL WALL

BY

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Sir Heneage Ogilvie (1948) has described, under the title "Large-intestine Colic due to Sympathetic Deprivation: A New Clinical Syndrome," two cases in which invasion of the crura of the diaphragm, coeliac axis, and semilunar ganglia by malignant growth produced a functional paralysis of the bowel which mimicked obstruction. The following case history reports invasion of the same area by what was probably a carcinoma of the pancreas, producing symptoms which suggested obstruction of the small intestine.

Case Report

The patient, a man aged 56, had suffered from mild dyspepsia all his life. His appendix was removed in 1936. A barium meal in 1943 had shown a scarred duodenal cap. Apart from occasional discomfort after food and a tendency to vomit if he was mentally disturbed, he had been healthy until two months before he visited me. He had then begun to suffer from attacks of colicky pain centred around the umbilicus, with tenderness in the right iliac fossa. The attacks came every few days, lasted a few hours, and left a sensation of abdominal distension. These attacks had become more frequent during the past fortnight and he had vomited every other day. A barium meal had shown a normal stomach and duodenum, and a barium enema a normal colon. He had lost half a stone (3.18 kg.) in weight. There had been no constipation except during the past week. His own doctor had thought he could feel a vague mass to the right of the umbilicus. While the history was being taken borborygmi were audible.

Examination showed a right paramedian appendicectomy scar, tender in the centre, and slight abdominal distension; borborygmi were well heard without a stethoscope, but there was no visible peristalsis or other abnormality. The remainder of the physical examination was negative. A provisional diagnosis of subacute intestinal obstruction due to adhesion of a segment of terminal ileum to the back of the paramedian scar was made, and operation was advised.

The patient was admitted to a nursing-home and a small barium meal requested with the object of locating the point of obstruction in the small intestine. Dr. T. V. Crichlow reported on the screening examinations and films as follows: "At three hours there are some coils of dilated small gut in the left hypochondrium and left iliac fossa. The mucosa is swollen and the calibre of the gut enlarged. In the right iliac fossa there is one loop of gut which appears to be contracted. At five hours there is still some dilatation of the loop seen at three hours, but there is no adherent portion to be seen. At eight hours this loop is completely empty, but the terminal ileum in the region of the ileo-caecal valve and also in the region of the hepatic flexure shows a moderate degree of enlargement. There is a fair amount of delay in the passage of the barium through these loops. At twelve hours the barium is completely in the colon. *Conclusions.*—There is definite

evidence of enlargement of some of the coils of the small gut, probably involving only the ileum. The appearances are consistent with partial obstruction such as could be produced by adhesions. No definite filling defect was seen in the lumen of the small gut."

Operation (anaesthetist, Dr. O. Carden Sibley; gas, oxygen, ether).—At laparotomy the small intestine was seen to be moderately distended but no obstruction was found. Hard glands were palpable in the upper part of the mesentery of the small intestine and a growth was found in the body of the pancreas, spanning the aorta, fixed to the posterior abdominal wall and quite irremovable. The large intestine was of normal size. A gland was taken for section and the abdomen was closed.

The patient became progressively distended after the operation despite gastric suction and intravenous glucose and saline, partly burst his wound, and died on the fourth post-operative day. No necropsy was obtained, but the gland removed at operation showed replacement by masses of undifferentiated carcinoma.

Discussion

A somewhat cursory search of the literature shortly after the patient had died, and discussion with colleagues, failed to throw any light on the matter. Ogilvie, who likewise failed to find any reference to the subject in the literature, appears to be the first to publish a description of this unusual syndrome. The manner of its production is of great but academic interest, since the symptoms are produced only after inextricable invasion by carcinoma of a relatively inaccessible region of the body. Ogilvie considers three methods by which the symptoms might be produced: (1) by parasympathetic stimulation from invasion by the tumour; (2) by secretion of a cholinergic substance by the tumour cells; or (3) by sympathetic paresis from invasion by the tumour. He believes, despite some contrary points, that the last is the probable explanation.

A fourth explanation might be considered in my case—that interference with the blood supply by pressure of the tumour on the superior mesenteric vessels might have evoked the symptoms. Mesenteric thrombosis will cause colic, borborygmi, and distension, though the picture is more acute. Against this theory is the fact that my patient's intestine showed no cyanosis. In Ogilvie's first case there was evidence that the pelvic colon was greatly affected, though the tumour cannot have caused interference with the inferior mesenteric artery. It seems, therefore, that the vascular hypothesis must fall down.

A carefully detailed post-mortem examination of a similar case might clear up the mystery, and it is to be hoped that it will be forthcoming.

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A six-months training course for hospital records officers is being jointly run until about the end of July by the Association of Medical Records Officers, the King Edward's Hospital Fund for London, and the Board of Governors of the Middlesex Hospital. It is hoped that similar courses will be organized later. The Ministry of Health states that the Minister welcomes the growing interest of hospitals in the proper maintenance and organization of patients' records and the decision of many of them to overhaul their records systems and appoint designated records officers. If this development is not to go astray only adequately trained or experienced officers should be appointed; and boards and committees thinking of making such appointments should defer doing so, unless there are exceptional reasons for immediate action, until there are enough really suitable candidates. Some boards and committees may be considering buying more or less elaborate equipment, such as punched card machinery, for their records departments. The Minister appreciates the value of such equipment where the volume of work makes it an economic proposition, but he is advised that the circumstances of a single hospital, or even in many instances of a management committee group, do not normally justify its purchase. No steps of this kind should therefore be taken by management committees without consultation with the regional hospital board.

THIOURACIL IN THYROTOXICOSIS

BY

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In this department 62 patients with thyrotoxicosis have been under treatment with thiouracil or methyl thiouracil for periods between 6 months and 4½ years. The series includes all cases of thyrotoxicosis admitted to the ward except a few so mild that phenobarbitone alone was used in treatment. The general results of treatment are here briefly recorded, and certain aspects of management in relation to auricular fibrillation, pregnancy, and granulopenia are discussed in the light of the experience gained.

Particulars of a Series of Cases

The distribution of cases by age, sex, and the presence or absence of exophthalmos is shown in Table I. Ten of the patients were males and 52 were females; their ages varied from 16 to 66 years. Exophthalmos was more common among the younger patients. No attempt was made to differentiate between primary and secondary thyrotoxicosis, and in only one case was there a definite history of an enlargement of the thyroid preceding the thyrotoxicosis by several years.

TABLE I

Age:	10–19		20–29		30–39		40–49		50–59		60–69	
Sex:	M	F	M	F	M	F	M	F	M	F	M	F
Eyes ..	E	O	E	O	E	O	E	O	E	O	E	O
No. ..	1	2	1	2	6	1	2	8	3	1	2	10	6	1	1	4	3		1	7

E = Exophthalmos present. O = No exophthalmos present.

All cases were admitted to the ward for treatment, and the effect of rest in bed and 1 gr. (65 mg.) of phenobarbitone three times a day was observed for one to three weeks. When the sleeping pulse had settled to a constant level for several nights, and the patient's symptoms showed no tendency to abate further on this treatment, the basal metabolic rate was estimated with the Benedict–Roth apparatus on two successive mornings, and treatment with thiouracil or methyl thiouracil was begun. The dose of thiouracil used at first was 0.6 g. daily, and this proved effective in all cases. Later 0.2 g. was tried, but, while this would control thyrotoxicosis of mild or moderate degree, it failed to do so in two severe cases. It was found, however, that 0.4 g. of thiouracil daily was as effective an initial dose as 0.6 g. Methyl thiouracil proved equally satisfactory in doses of 0.2 g. daily, and is now used for all cases. Each patient's progress was followed clinically and assessed every ten days, when the basal metabolic rate was estimated. After three weeks on thiouracil the patient was usually discharged on a maintenance dose of 0.2 g. of thiouracil or 0.1 g. of methyl thiouracil daily, and was seen thereafter at intervals of six weeks. White cell counts were done twice a week in hospital, and at each out-patient attendance, although it was realized that they were of no value as indicators of impending agranulocytosis. They served to remind the patients of the possible dangers of the treatment, which had been explained to them in the ward, and revealed several cases of granulopenia.

Most cases were adequately controlled by 0.1 g. of methyl thiouracil daily or less; some required 0.15 g. The dose was decided on a clinical estimate of the patients' condition when they reported to the follow-up clinic. No single observation was found to be completely trustworthy, but a reasonably accurate idea of the state of the patients was obtained by asking them how they felt, how much

work they could comfortably do, and whether they got any palpitations; also by noting the weight, resting pulse rate, state of the skin, and presence or absence of tremor. The size of the thyroid gland was also noted.

Thiouracil effectively controlled the thyrotoxicosis in all cases, and the majority were back in full employment within six weeks of starting treatment. All patients were told that they should regard themselves as restored completely to normal as a result of the treatment, and only two of the 59 cases given thiouracil alone have not returned to full activity. One is a woman with advanced spondylitis ankylopoietica who cannot do heavy housework, and the other a country postman who could not continue his bicycle deliveries. He is now working as a taxi driver. Most of the patients are housewives, and all except a few over 60 do their own housework, including scrubbing and polishing floors. Four are crofters' wives and had returned to full activity within six weeks of starting thiouracil, as had two men in very heavy employment—one a cyclist messenger, and one who does a full day's work shovelling granite into a crusher. A railway-track layer was doing light work in four weeks and full work in eight weeks after starting thiouracil. The two patients still at school also lead normal lives without any restrictions.

TABLE II.—*The Position in 1948*

Duration of Treatment (Months)	Group 1	Group 2	Group 3	Group 4	Total
6–12 ..	2	7	0	0	9
12–18 ..	9	3	0	0	12
18–24 ..	5	3	1	0	9
24–30 ..	4	7	0	0	11
30–36 ..	2	1	0	0	3
36–42 ..	4	2	0	0	6
42–48 ..	3	0	0	0	3
48–54 ..	2	0	1	1	4
54–60 ..	2	0	0	0	2
Totals ..	33	23	2	1	59

Group 1: Off thiouracil for three months or more and satisfactory.
Group 2: On thiouracil and satisfactory.
Group 3: On thiouracil and unsatisfactory.
Group 4: Off thiouracil and unsatisfactory.

The position of the cases in the series in June, 1948, is shown in Table II. Of 13 patients who have been under observation for three years or more, five have taken no thiouracil for 33 to 39 months and have not relapsed; three have taken none for 21 to 31 months; three relapsed off thiouracil, two of them again being controlled by thiouracil; and two have been taken off thiouracil within the last six months. Three patients are classified as unsatisfactory: (1) The patient off thiouracil is the only one in the series who developed a granulopenia with infection. She refused operation, and, although living a normal life looking after her family, is moderately thyrotoxic. (2) This patient is adequately controlled by thiouracil, but has many symptoms caused by her life being spent in three rooms with her husband, two children, and her mother-in-law. (3) This patient feels well and does all her own housework, but has a persistent tachycardia and appears to be slightly toxic. She states that visiting the hospital always makes her nervous.

Three cases are not included in Table II, and are accounted for as follows. One man aged 23 died of suppurative bronchiectasis. His thyrotoxicosis was under control at the time of death. Thyroidectomy has been performed on the other two patients. One of these was a man aged 30 who had previously been treated by deep *x*-ray therapy for polycythaemia rubra vera and developed a persistent granulopenia on thiouracil. Before thyroidectomy, when taking thiouracil, he was fit and doing full outdoor work as a gas-meter inspector. Now, fifteen months after thyroidectomy, he feels fit, but can only do clerical work indoors, and is easily made breathless by exertion. In addition, the fine tremor of the fingers has returned, the skin is silken and sweaty, and there is a slight increase in the pulse rate, which, however, was never reduced below 90 per minute by thiouracil. The basal metabolic rate is 95% of normal. In the other case thyroidectomy was performed because of the great increase in the size of the thyroid.

Size of Thyroid

The size of the thyroid was estimated at each visit by inspection and palpation. Four categories were made: slight enlargement, when there was no visible goitre; slight to moderate enlargement, when the enlargement was noticeable only when the patient swallowed; moderate enlargement, when an obvious goitre was present; and large. In most cases there was some increase in the size of the thyroid after treatment began, but usually this was only slight and regression occurred after six months to a year.

At present two patients have large goitres which cause no inconvenience. No thyroidectomy has been advised, as in both cases some decrease in size is expected. Two other patients had large goitres, but one of these has been removed surgically and the other has regressed to slight to moderate size, thiouracil administration having ceased. One patient with a moderate enlargement underwent thyroidectomy, and five patients at one time showed moderate enlargement, but in all these cases the thyroid is now small. Four patients have thyroids of slight to moderate size, and in eight the thyroid has shrunk from this size to only slight enlargement. In the remaining 40 cases the enlargement is slight.

Complications due to Thiouracil

In five cases skin rashes have occurred in the early weeks of thiouracil therapy. Unfortunately, as all the patients were at the time taking phenobarbitone it is impossible to be sure whether this drug or the thiouracil was responsible. In all cases the rashes faded in a few days after withholding phenobarbitone.

An unexplained *fever* occurred in four cases, but the temperature settled to normal in a few days without any alteration in treatment.

Granulopenia (less than 1,000 neutrophil polymorphs per c.mm. of blood) has been noted in eight cases. One patient reported because she had developed a sore throat. She had originally presented with thyrotoxicosis in July, 1944, and had been treated with thiouracil for 16 months, thiouracil then being stopped. She had remained in good health without thiouracil for 18 months, when a mild relapse occurred. Thiouracil, 0.2 g. daily, was given once more. On the sixth day after beginning thiouracil her granulocyte count was 2,100 per c.mm.; three days later a sore throat developed, and the next day she was found to have 186 granulocytes per c.mm. of blood. Thiouracil therapy was stopped and penicillin was given. The cell count rose rapidly, and on the third day after stopping thiouracil showed 2,600 granulocytes.

In the remaining seven cases of granulopenia there were no symptoms or signs of any infective process, the granulopenia being revealed by routine blood examination. The duration of treatment before the onset of granulopenia in these cases varied from four weeks to 16 months. In three cases the polymorph count was 384, 400, and 440 cells per c.mm., but the patients felt in their usual state of health. In all seven cases the cell count rose rapidly when thiouracil was stopped, and none developed an infection or was given any antibiotic treatment.

The further management of patients who have had granulopenia has varied. As already mentioned, the one who developed an infection refused operation and is moderately toxic, and one with granulopenia and no infection has had a thyroidectomy. Four patients have resumed treatment with thiouracil or methyl thiouracil, and over periods varying from six to 18 months have shown no further granulopenia. One patient proved sensitive to both thiouracil and methyl thiouracil, but after a slight relapse off thiouracil his condition is satisfactory. In the last case the granulopenia occurred on the day that thiouracil was stopped for a period of observation, and so far no thyrotoxic symptoms have recurred. In cases given thiouracil after having had a granulopenia the white cell count has been observed three times weekly for the first month and thereafter every six weeks.

Other Complications

Myxoedema occurred in a woman aged 66 who was admitted with severe thyrotoxicosis complicated by an acute mania. She responded rapidly to thiouracil, and medication was stopped after seven months. Nineteen months after cessation of the thiouracil she was found to be severely myxoedematous, with a basal metabolic rate 71% of normal. The myxoedema in this case is not likely to be the result of thiouracil administration.

Diplopia occurred in two cases. In one it lasted for only a few weeks during the early months of treatment. In the other it was a troublesome symptom that persisted for about six months. The cause was probably exophthalmic ophthalmoplegia.

Pregnancy

There have been three pregnancies in women taking thiouracil. In the first case the mother was kept on thiouracil throughout pregnancy. The infant was born alive with an easily palpable, rather hard thyroid. This became impalpable after feeding for one month on pooled human milk, and the infant is now a normal child of 2½ years. In the second pregnancy thiouracil was not given for two months before delivery; Lugol's iodine, 10 minims (0.6 ml.) daily, was given instead. A normal infant was born. In the third pregnancy thiouracil was stopped four months before delivery and iodine was not given. A normal infant was born in this case also. Both pregnancies in which the thiouracil was stopped before delivery were followed by relapse of the thyrotoxicosis within three months of delivery.

Auricular Fibrillation

Ten cases of thyrotoxicosis complicated by auricular fibrillation have been treated. In four the fibrillation was continuous and was associated with congestive heart failure, but in all cases the history suggested that failure had been present for only a few weeks. In the first case regular rhythm was established after 15 days' treatment with thiouracil alone. In the second, auricular fibrillation persisted after nine weeks' treatment with thiouracil alone, although the thyrotoxicosis appeared to have been controlled. When regular rhythm was restored by quinidine after digitalization a transient motor aphasia occurred, presumably the result of a cerebral embolism. The third and fourth cases were treated successfully by quinidine on admission to restore regular rhythm, and then by thiouracil to control the thyrotoxicosis. In five patients paroxysmal fibrillation was shown by electrocardiography to be present. In four of these the fibrillation was controlled by thiouracil alone, but in the fifth the paroxysms of fibrillation were so frequent and the patient's condition so distressed by cardiac failure that digitalis was given, and regular rhythm was restored by quinidine before thiouracil was used. In the tenth case fibrillation was known to have been present for three years and heart failure for two months. The patient had been receiving digitalis since the onset of the fibrillation. She was treated by complete rest in bed and injections of mersalyl, and methyl thiouracil, 0.2 g. daily, with steady improvement. After three weeks the digitalis was stopped and the improvement continued. The oedema had gone after six weeks.

In all ten cases, once the thyrotoxicosis was adequately controlled, the administration of digitalis and quinidine, if they had been given, was stopped, and treatment was continued with thiouracil alone. In the last case slow fibrillation continues without evidence of heart failure, but in the others no recurrence of fibrillation has been observed while on thiouracil. The periods of observation since restoration of regular rhythm vary from seven to 27 months.

Koilonychia

Koilonychia has been noted in seven of the 51 cases seen between October, 1945, and January, 1948 (Table III). All were in women, and a history of thyrotoxicosis lasting a year or more before reporting for treatment was usual. Only Case 6 was given iron. The haemoglobin level (Haldane) on admission is shown in the table. In four of the cases in which one year's follow-up has been possible the koilonychia has entirely disappeared and a normal strong nail has grown. None of these cases was given iron, and in three there was no rise in the haemoglobin level.

TABLE III.—*Showing the Haemoglobin Level in the Patients having Koilonychia*

Case	Haemoglobin on Admission	Haemoglobin After 1 Year
1	86%	86%
2	85%	86%
3	68%	68%
4	78%	94%
5	94%	—
6	45%	—
7	86%	—

Discussion

In this series of cases thiouracil has proved satisfactory in the treatment of thyrotoxicosis, and only one patient of those given thiouracil alone has had to obtain lighter employment because of the disease. The disability in this case was probably less than that of the first patient who had a thyroidectomy and in whom symptoms returned after the operation despite a basal metabolic rate 95% of normal. The symptoms in this latter case are similar to those described by Martin (1948), and it is curious that they were not present when the basal metabolic rate was reduced to 100% by thiouracil.

The one serious complication encountered has been granulopenia, and only a high degree of co-operation on the part of the patients has avoided a catastrophe. Several have reported to the hospital or to their own doctors with sore throats, but only one was found to have a granulopenia. The position of those in whom a granulopenia was discovered by routine blood examination is not certain. Agranulocytosis usually occurs with great rapidity, as in the case in the present series, and in the only patient with granulopenia whom it was possible to keep in hospital for observation the neutrophil polymorph count remained low for 18 days while thiouracil was given, rose when thiouracil was withheld, and remained normal when methyl thiouracil was used. This suggests that granulopenia is not necessarily a prelude to agranulocytosis. Five patients who developed granulopenia were again given thiouracil or methyl thiouracil after an interval off the drug had allowed

recovery. Only one of these developed a further granulopenia, which appeared in the first few days after starting the drug.

The management in pregnancy is a matter requiring further observation. The enlargement of the infant thyroid that was found when thiouracil was given throughout pregnancy has been previously reported by Eaton (1945). It is probably best to stop thiouracil administration some months before delivery. As thiouracil is excreted in maternal milk no mother taking thiouracil should suckle her child (Williams *et al.*, 1944; Chesley, 1944).

Although thiouracil alone may restore regular rhythm in thyrotoxic auricular fibrillation it does not always do so, and sometimes, when the thyrotoxicosis is slow in responding, may take a long time, during which there is some danger of embolism. After the episode of embolism which occurred in the second case with auricular fibrillation it was thought safest to establish regular rhythm with quinidine at the earliest possible moment in all cases where the fibrillation was not of long duration. Accordingly such cases were admitted as emergencies to the ward, digitalized on admission, and then given quinidine. In many cases, however, like the one here reported, the fibrillation may be allowed to continue and the heart failure will respond to thiouracil alone (Cookson and Staines, 1947).

Koilonychia has been noted previously in thyrotoxicosis and its disappearance after treatment with thiouracil reported by Cooke and Luty (1944). It is evident from their records, and from the observations on the first three cases shown in Table III, that the koilonychia in thyrotoxicosis is unrelated to the haemoglobin level.

Summary

A series of 62 consecutive cases of thyrotoxicosis were treated with thiouracil or methyl thiouracil. All cases responded to the drug, and only one man treated with thiouracil alone had to obtain lighter employment. The time spent off work was usually less than six weeks from starting thiouracil therapy. In three cases the results were regarded as unsatisfactory.

Thyroidectomy was performed in two cases, the indications being persistent granulopenia and excessive thyroid enlargement respectively. One patient died from suppurative bronchiectasis.

Granulopenia occurred in eight cases. In one there was infection, which was controlled by penicillin; the others were found on routine blood examination. Four of these cases have resumed thiouracil therapy without further granulopenia.

One patient developed myxoedema after being off thiouracil for 19 months.

Two patients developed transient diplopia, probably due to exophthalmic ophthalmoplegia.

Three pregnancies occurred. Thyroid enlargement was noted in the child in the only case in which thiouracil was given throughout pregnancy.

The treatment adopted for continuous auricular fibrillation of short duration was to restore regular rhythm with quinidine as soon as possible, and to stop quinidine administration when the thyrotoxicosis was controlled. Paroxysmal fibrillation responded to thiouracil alone.

Koilonychia was noted in seven of 51 cases. In three of these normal nails were formed in about one year without any rise in haemoglobin.

I wish to thank Professor R. S. Aitken for giving me charge of these patients during my term as his assistant.

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THYROTOXIC AURICULAR FIBRILLATION TREATED WITH THIOURACIL

BY

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Thiouracil compounds have been shown to be effective in causing reversion to sinus rhythm in cases of thyrotoxic auricular fibrillation. Cookson (1945) secured reversion in three out of 10 cases treated with thiouracil alone, but noted that one of his failures had mitral stenosis. Out of Nussey's (1944) three patients sinus rhythm was restored by thiouracil in one. In a later paper Cookson and Staines (1947) claimed reversion to sinus rhythm with thiouracil alone in eight out of 16 patients after an average of 35 days' treatment, the longest period being 15 weeks and the shortest four days. Associated cardiac disabilities (mitral stenosis) are reported in only one of the patients with persistent fibrillation, McGavack and others (1945) reported reversion to sinus rhythm with thiouracil alone in 12 out of 18 patients, one of the 12 having bundle-branch block. Grainger's (1945) two patients with fibrillation both reverted spontaneously to sinus rhythm. Clarke (1948) achieved reversion to sinus rhythm in three out of six patients with thiouracil alone, while Wilson (1946) reported reversion to sinus rhythm in five out of six cases included in the present series.

The object of this communication is to present briefly the effect of treatment with thiouracil drugs on cases of auricular fibrillation due to thyrotoxicosis, and to determine the value of certain associated factors in assessing the likelihood of reversion to sinus rhythm without additional therapy. Out of 144 thyrotoxic patients attending the endocrine clinic 28 (19%) had auricular fibrillation. All had been treated with thiouracil compounds (thiouracil, methyl thiouracil, or propyl thiouracil) for not longer than two years, and were cases of secondary thyrotoxicosis. Their ages ranged from 32 to 68 years (average, 50). Thirteen patients reverted to sinus rhythm with thiouracil treatment: quinidine was deliberately omitted in order to investigate the long-term effects of thiouracil on auricular fibrillation. The average amount of thiouracil compound given was 50 mg. daily. Six of the patients received digitalis to control ventricular rate and congestive failure.

Apart from 11 patients who had a systolic blood pressure of 160 mm. Hg or greater, there was no clinical evidence of cardiovascular disease. Cardiomegaly was present in 18 cases. In no case was the systolic blood pressure greater than 190 mm. Hg. Two patients with persistent auricular fibrillation have been excluded from the analysis, as the thyrotoxicosis is not yet under control.

Group I: Patients in whom Auricular Fibrillation Persisted

In each of the 13 patients in this group the thyrotoxicosis was well controlled but the fibrillation persisted. The average age was 52 years, and the duration of symptoms before treatment varied from three months to 12 years, the average being 77 months. The duration of treatment up to the present has varied from one month to two years, the average being 11 months. Before treatment was started five patients had a systolic blood pressure of 160 mm. Hg or greater, while slight to moderate cardiomegaly was present in nine patients. The cases are summarized in Table I.

TABLE I.—*Group I Cases*

Case No.	Age	Duration of Disease Before Treatment	Duration of Treatment	B.P. Before Treatment	Heart Enlarged Before Treatment	Digitalis Given	E.C.G. Before Treatment
1	55	9 years	8 months	170/75	+	—	AF only
2	57	4 ,,	2 years	120/60	—	—	RBBB
3	68	3 ,,	6 months	170/?	+	D	AF only
4	52	3 months	8 ,,	140/70	+	—	CCI
5	60	Not known exactly	1 month	170/110	+	D	—
6	52	,,	18 months	—	—	D	—
7	61	12 years	6 ,,	130/100	+	D	—
8	49	12 ,,	9 ,,	140/75	+	—	—
9	35	12 ,,	1 year	150/85	—	—	AF only
10	45	Not known exactly	18 months	130/70	+	D	CCI
11	53	3 months	8 ,,	170/110	—	—	AF only
12	57	9 years	9 ,,	170/70	+	—	CCI
13	38	3 ,,	1 year	150/85	+	—	AF only

D = Digitalis. CCI = Chronic coronary insufficiency. RBBB = Right bundle-branch block. AF = Auricular fibrillation.

Electrocardiographic Changes.—Electrocardiograms were recorded from nine patients before treatment. Apart from auricular fibrillation, four were abnormal: right bundle-branch block was found in one subject, while three others showed chronic coronary insufficiency. Of the four patients showing abnormal curves, only one had hypertension, and of the five patients with hypertension only one had electrocardiographic abnormalities other than auricular fibrillation.

Fig. 1 is an electrocardiogram of Case 12, representative of the more severe type of changes seen; Fig. 2 (Case 4) is representative of minor changes; and Fig. 3 is an electrocardiogram of Case 2, showing right bundle-branch block.

Group II: Patients in whom Auricular Fibrillation Reverted to Sinus Rhythm

The average age of the 13 patients in this group was 49 years. The duration of the disease (but not necessarily of the fibrillation) before treatment varied from four months to 10 years, the average being 50 months, while the duration of treatment before sinus rhythm was restored varied from one week to four months, the average being six weeks. Only one patient received digitalis. Six patients had a systolic blood pressure of 160 mm. Hg or greater before treatment. Case records are summarized in Table II.

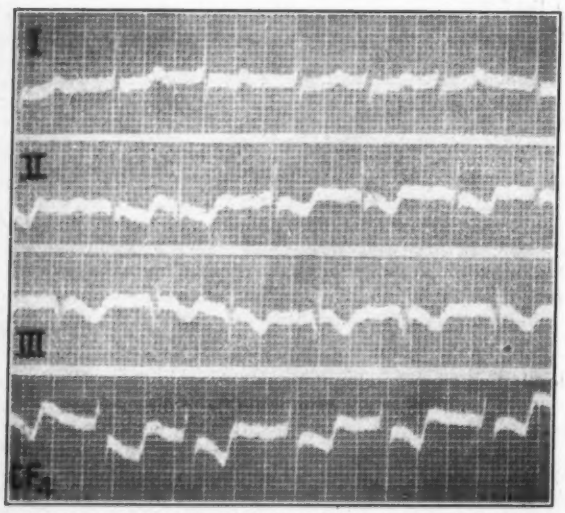

FIG. 1.—Case 12.—There is right axis deviation. Auricular fibrillation. The Q wave is present in Lead III (amplitude 2–2.5 mm.; duration less than 0.04 sec.). The S wave in Lead III is only slightly greater in amplitude than the Q wave (3–4 mm.). There is sharp inversion of the T waves in Leads II, III, and CF_4. (1 cm. = 1 mv.) The ST segment is depressed by 0.25 mm. in Lead I, 0.5–1 mm. in Lead II, and 1.5 mm. in Lead CF_4. (No digitalis.)

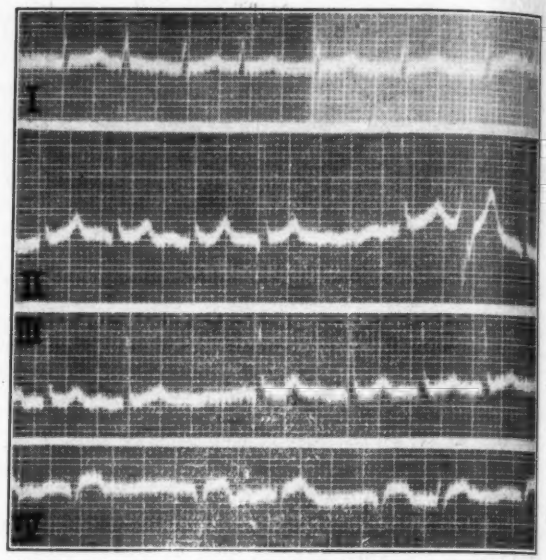

FIG. 2.—Case 4.—Auricular fibrillation. There is a small Q wave (1 mm. amplitude) in Lead II. There is 0.5 mm. elevation of the ST segment in Leads II and III and 1 mm. elevation in Lead CF_4 (1 cm. = 1 mv.). The T wave is inverted in Lead CF_4. One premature ventricular contraction in Lead II. (No digitalis.)

TABLE II.—*Group II Cases*

Case No.	Age	Duration of Disease Before Treatment	Duration of Treatment Before Reversion	B.P. Before Treatment	Heart Enlarged Before Treatment	Digitalis Given	E.C.G. Before Treatment
14	48	6 years	1 week	135/65	+	—	AF only
15	56	4 months	2 months	166/88	+	—	—
16	45	4 years	2 ,,	180/70	+	—	CCI
17	50	10 ,,	2 ,,	165/80	+	—	,,
18	54	4 ,,	2 weeks	126/80	+	—	AF only
19	41	2 ,,	1 month	155/95	+	—	,,
20	—	The only information available regarding this patient indicates that reversion occurred after thiouracil treatment					—
21	32	3½ years	4 months	145/95	—	—	AF only
22	56	Not known exactly	2 ,,	186/100	+	—	,,
23	60	6 months	6 weeks	160/110	+	D	,,
24	59	9 years	1 month	140/80	—	—	,,
25	39	5 ,,	1 week	150/95	—	—	,,
26	45	6 months	3 weeks	190/90	+	—	AF only. (After reversion to SR 1st degree A-V block seen.)

D = Digitalis. SR = Sinus rhythm. CCI = Chronic coronary insufficiency. AF = Auricular fibrillation.

Electrocardiographic Changes.—Electrocardiograms were obtained in 11 patients before treatment. In two subjects (both with slight hypertension) changes indicating chronic coronary insufficiency in addition to auricular fibrillation were present, while in a third patient first-degree A-V block was seen after sinus rhythm had been restored.

It may be said, therefore, that six patients showed some evidence suggesting cardiovascular disease associated with but not due to thyrotoxicosis.

Discussion

These results indicate that reversion to sinus rhythm may be expected from thiouracil treatment alone in approximately 50% of cases, and show that thiouracil compounds are at least as effective as surgery in this respect (Hurxthal, 1930; Anderson, 1932). Reversion is not, as Cookson (1945) suggests, a satisfactory measure of the control of the disease, although no patient has been shown to revert to sinus rhythm unless the disease is fully controlled. Of the 28 cases, 26 were rendered clinically non-toxic by

thiouracil drugs, so that persistence of auricular fibrillation suggests that some other cardiac abnormality might be an important factor in the cases in the second group. Six patients in this group showed clinical or electrocardiographic stigmata suggesting associated cardiovascular disease, compared with seven patients in the first group. Systolic blood pressures of 160 mm. Hg or over occurred in five patients in Group I and six patients in Group II; but electrocardiographic abnormalities were present in four out of nine patients in Group I and two out of 11 patients in Group II.

The average period of treatment to obtain reversion in this series was six weeks, while the average duration of symptoms before treatment was greater in Group I than in Group II. It is unfortunate that the duration of fibrillation before treatment could not be ascertained. Digitalis was given to a larger number of patients in Group I than in Group II. No difference in the ability to abolish fibrillation was detected in any one of the three thiouracil compounds used. Finally, there was a higher incidence of electrocardiographic abnormalities in the patients with persistent fibrillation.

Conclusion

In view of these findings it seems reasonable to conclude that if sinus rhythm is not restored by thiouracil alone after a maximum period of four months auricular fibrillation may become permanent unless other measures are taken. In these circumstances it is suggested that quinidine should be given to restore sinus rhythm if the thyrotoxicosis is under control. If thyrotoxicosis has not been effectively controlled by thiouracil, alternative treatment should be considered. There appears to be no reliable method of gauging the prospect of stopping fibrillation with thiouracil alone in any given patient, but the presence of electrocardiographic abnormalities indicating associated cardiovascular disease lessens the chance of reversion. Sinus rhythm is also less likely to return if the patient has a history of symptoms for more than 4½ years before treatment. It is possible that digitalis tends to establish the arrhythmia, and its use should be avoided except where there is associated congestive heart failure.

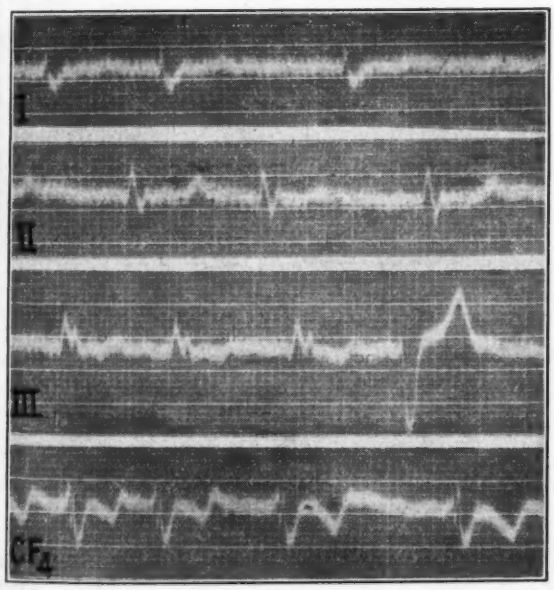

FIG. 3.—Case 2.—There is right axis deviation. Auricular fibrillation. The QRS duration is 0.12 sec. in Leads III and CF_4, and 0.1 sec. in Leads I and II. The T wave is biphasic in Lead III and is sharply inverted in Lead CF_4. There is a secondary R wave in Leads II, III, and CF_4. One premature ventricular contraction can be seen in Lead III. These changes are indicative of intraventricular block, probably right bundle-branch block. (No digitalis.) (1 cm. = 1 mv.) (It is of interest that further studies (two years later, using augmented unipolar leads, showed complete right bundle-branch block.)

I wish to thank Professor E. J. Wayne for helpful criticism, and Dr. Andrew Wilson for his notes on the earlier cases in the series.

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PHENOLOGY OF BRITISH HAY-FEVER PLANTS AND ITS SIGNIFICANCE TO ALLERGISTS

BY

H. A. HYDE, M.A., F.L.S.

(From the National Museum of Wales, Cardiff)

It is generally accepted that pollen can cause hay-fever only if it is actually present in the air and in significant quantity; in other words, that hay-fever is exclusively an inhalant allergy. Skin tests, it seems to be agreed, are very helpful in diagnosis but are by no means infallible. Even if a patient gives a positive reaction to a reliable pollen extract it is necessary before making the diagnosis to show that his symptoms coincide in time with the incidence of pollen of the type concerned; if they do not he should be presumed non-allergic to that type of pollen. It is therefore important that those interested in hay-fever and pollen asthma should know what pollens are likely to be present in the air at various times and in what relative quantities.

The study and recording of periodical phenomena of this kind is known as phenology.[1] During the past seven years the phenology of British hay-fever plants, and in particular of atmospheric pollen, has been studied closely by the method of pollen-trapping. The pollen caught on glass microslides, exposed day by day for a year or more at some fourteen stations in Great Britain—from South Wales and London to as far north as Aberdeen—has been analysed at Cardiff. Some of the results so far obtained[2] are summarized in the accompanying diagram.

The principal pollen types can be grouped under three headings—trees and shrubs, grasses, and other herbs. All the most important tree pollens are liberated in the spring. Grass pollens dominate in the months of June and July. Thereafter relatively little pollen is present in the air except locally.

The thick lines in the diagram indicate the periods during which the respective pollens are likely to be present in the air in lowland localities in the south of Great Britain. The thinner extensions of the thick lines indicate that the pollens are usually present in smaller quantities both before

[1] Or phenomenology. Greek *phaenomenon*, an appearance; *logos*, a discourse.

[2] Hyde, H. A., and Williams, D. A. "Studies in Atmospheric Pollen," I–III. *New Phytologist*, **43–5**, 1944–6. Hyde, H. A. "Studies in Atmospheric Pollen," IV–V. Unpublished.

and after their main periods. These periods vary from one year to another, the variation being greater in those types of pollen which appear in the spring than in those which appear later in the season. Thus the date of first appearance of hazel pollen in Cardiff has been known to vary between Jan. 1 and Feb. 7 (37 days), that of its first appearance in quantity between Feb. 1 and March 21 (48 days); the corresponding ranges of date for ash pollen are March 3 to April 16 (44 days) and March 17 to April 19 (33 days); birch, March 20 to April 14 (25 days) and April 4 to 28 (24 days); oak, April 10 to May 6 (26 days) and April 15 to May 14 (29 days); plantain, April 12 to May 6 (24 days) and April 20 to May 14 (24 days); grasses (apart from the almost year-long trickle of occasional grains), March 12 to April 21 (40 days) and May 28 to June 4 (7 days); nettle, May 4 to June 3 (30 days) and June 6 to 14 (8 days); lime, June 13 to 28 (15 days) and June 18 to July 5 (17 days); and mugwort, July 6 to 30 (24 days) and Aug. 1 to 10 (9 days). These dates do not vary greatly from place to place in the south in any one year, but they tend to be later in Scotland. The only satisfactory method of determining them for a particular year is by pollen-trapping.

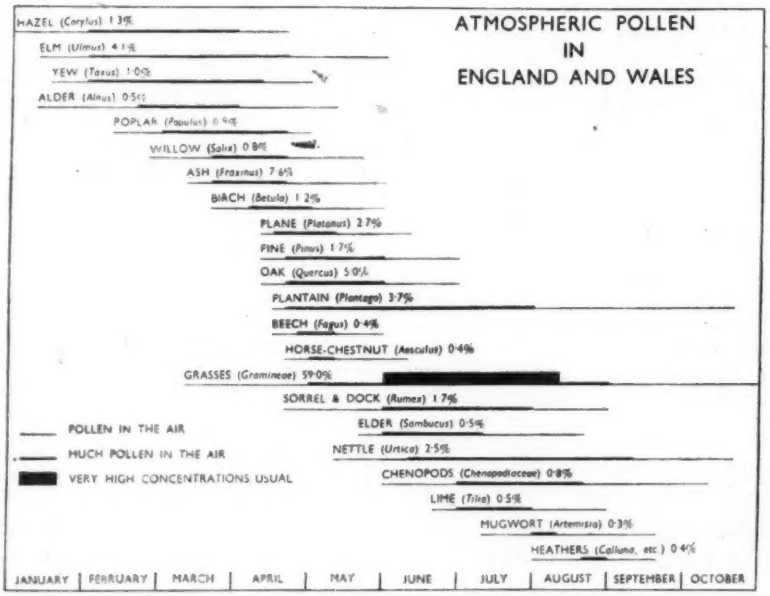

Diagram showing pollen phenology in England and Wales, based on pollen-trapping experiments carried out in 1942–7. The horizontal lines indicate the periods during which the respective types of pollen may be expected to be present in the air, though in fluctuating amounts. The main season of incidence of each type is marked by a heavier line and the peak period *for grasses* only by a still heavier one. The percentage figures appended to the names of the various pollen types are based on counts made in the course of the survey referred to in the text. Other types, not shown here, made up the remaining 3% of pollens caught and identified.

Not only the time of appearance but also the quantitative incidence of a particular type of pollen varies from year to year; thus ash pollen was extremely abundant all over the country in 1943, but was almost negligible by comparison at Cardiff and probably elsewhere in 1944 and 1945. Further research would be needed to determine to what extent variations of this kind are general and whether they follow any kind of periodicity.

Most of the pollen types indicated in the diagram are derived from source plants native to and widely distributed in the country, and are likely to be encountered in significant quantity in all lowland localities except in the middle of the biggest towns. The types which come under this heading are as follows (in their usual order of appearance): hazel, elm, alder, ash, birch, oak, plantain, grasses, sorrel and dock (*Rumex* spp.), nettle, elder, chenopods, and mugwort.

Yew, poplar, beech, and pine, though all native in various parts of the country, are rather more local, even as planted trees, than are those in the preceding list. Plane, horse-chestnut, and lime are all street and park, not woodland, species, and their pollens are correspondingly localized; in particular, plane pollen, derived from the London plane, *Platanus acerifolia*, is extremely abundant in central London. Heathers (the principal species of which is common ling, *Calluna vulgaris*) are confined to heathy places, apart from the neighbourhood of which their pollen is sparse in quantity.

The majority, but not all, of the types of pollen in the diagram are regarded by American allergists as antigenic. The exceptions include hazel and beech (doubtful), pine (very rarely), yew, horse-chestnut, nettle, and elder (clinical significance unknown), and heather (known to have caused symptoms in Great Britain—Dr. John Freeman, personal communication). Grass pollinosis apart, the frequency of symptoms caused by the remaining pollens (trees and herbs of various kinds) in Great Britain would appear at present to be a matter of conjecture.

In addition to the pollens so far referred to, various others have been caught regularly in our apparatus. With one exception, none of these makes up more than 0.3% of the annual catch, and few are likely to occur in quantities which can be regarded as clinically significant. Among these types are the following (in order of numerical importance): parsley family, buttercup, wood-rush, maple and sycamore (*Acer* spp.), rosaceous trees (hawthorn, etc.), sweet chestnut, sedges, rushes, walnut, mulberry, dog's mercury, privet, and some 20 others. The one exception is pollen of the insect-pollinated members of the daisy family—i.e., Compositae, excluding the mugworts—which comprises 0.5% of the total: this, however, is spread over some nine months of the year, and at no season does it attain the numerical importance of the types referred to in the diagram.

The importance of fish to supplement our present-day rations requires no emphasis for the dietitian or the housewife, but the necessity of delivering the catch to the fishmonger as fresh and as palatable as possible is not sufficiently appreciated by fishermen or distributors. Sea-water bacteria, non-pathogenic to man, are the chief cause of bad fish. These organisms, which are found in large numbers in the gills and skin of freshly caught fish, multiply rapidly at ordinary temperatures and invade the flesh. Careful chilling on the fishing vessel by stowage in crushed ice considerably retards bacterial growth and is an important factor in retaining the freshness of the catch, but the fish must also be properly washed and gutted at sea and stowed with reasonable care. These principles are particularly important now that over half our supplies come from distant grounds and trawlers are obliged to make voyages of three weeks or more. The revised leaflet *Care of the Trawler's Fish*, published by the Stationery Office for the Department of Scientific and Industrial Research, explains these points in simple terms, and lists the steps to be followed in the handling and stowage of the catch.

A SIMPLE COLORIMETRIC METHOD FOR ESTIMATING SUGAR IN URINE OR MILK

BY

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The method described below is a modification of Fine's (1934) method by which the latter is adapted to the colorimeter so as to give the amount of sugar in urine or milk within 2 g. per litre (0.2 g.%) of that determined by Folin's method. Several hundred samples of urine sugar were simultaneously determined by this method and by that of Folin. The results of the new method were found just as satisfactory as those of the latter. Fewer samples of milk were tried, though the results were fairly good. As a quantitative test for sugar in urine the method is most suitable as a clinical test where minor differences of 1 to 2 g. per litre are of no importance either to the physician or to the patient. It is also most suitable and most convenient for routine work, because qualitative tests can rapidly be made quantitative (Harrison, 1947).

Urine or milk is heated with Benedict's qualitative reagent, and the precipitate is removed by centrifuging. The blue colour of the supernatant solution is read colorimetrically.

Procedure for Urine Sugar

Mix 5 ml. of Benedict's qualitative reagent and 0.25 ml. of urine, heat in a boiling-water bath for five minutes, and then centrifuge. If the supernatant fluid is not blue, repeat with 0.1 ml. of urine. If the supernatant fluid is still not blue, dilute the urine 1 in 2 or more and repeat (alternatively, use 10 ml. of Benedict's qualitative reagent mixed with 0.1 ml. of urine).

Reading with a Duboscq Type of Colorimeter

Take about 2 ml. of the supernatant fluid without disturbing the precipitate of cuprous oxide. Set the unknown in the colorimeter at 10 mm. and read the standard. The standard is prepared from the same Benedict qualitative reagent used for the unknown by taking 5 ml. of Benedict + 15.6 water—i.e., Benedict solution 97% diluted 1 in 4 in water (Fine, 1935).

From the Table or Fig. 1 the amount of sugar in urine (grammes per litre) can be directly read for the colorimetric reading of the standard. The table and chart were made from several accurate readings of the standard against various sugar concentrations treated as above.

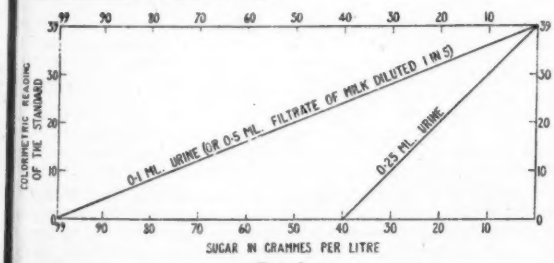
COLORIMETRIC READING OF THE STANDARD
0·1 ML. URINE (OR 0·5 ML. FILTRATE OF MILK DILUTED 1 IN 5)
0·25 ML. URINE
SUGAR IN GRAMMES PER LITRE

FIG. 1

If it is desired not to use a table or graph the following formula for calculating the amount of sugar in the urine is applied.

Setting the unknown at 10, suppose that the reading of the standard is R, then with 0.25 ml. of urine 40 − R = urine sugar in grammes per litre. With 0.1 ml. of urine the formula (40 − R) × 2.5 gives an approximate figure, within 1 or 2 grammes of that in the table.

It must be admitted that with the upper part of the table—i.e., when R = 1 or 2 or even 5—it is very difficult and sometimes impossible to make good colorimetric readings. On the lower part of the table, however, where R equals 38 or 39, the calculation of the amount of sugar in urine may be fallacious unless there is a definite precipitate of cuprous oxide; again, the reduction of copper may not be due to sugar at all.

TABLE

Colorimetric Reading of the Standard	With 0·25 ml. of Urine	With 0·1 ml. of Urine
1	39	99
2	38	96
3	37	92
4	36	90
5	35	86
6	34	85
7	33	83
8	32	81
9	31	78
10	30	76
11	29	73
12	28	71
13	27	70
14	26	68
15	25	64
16	24	61
17	23	59
18	22	56
19	21	54
20	20	51
21	19	49
22	18	46
23	17	44
24	16	41
25	15	39
26	14	36
27	13	33
28	12	31
29	11	28
30	10	26
31	9	23
32	8	21
33	7	18
34	6	16
35	5	13
36	4	11
37	3	8
38	2	5
39	1	
40	0	0

Reading with a Photo-electric Colorimeter (Lumetron)

Mix 2 ml. of supernatant fluid with 8 ml. of water and put in the colorimeter tube (1 in. (2.5 cm.) calibre). Transmission is read through the orange filter (850 Lumetron), setting water at 100% transmission.

Calibration.—Glucose concentrations of 100, 80, 60, 40, 30, 20, 10, and 0 g. per litre are prepared. Mix 0.25 ml. of each of the 40, 30, 20, 10, and 0 g. per litre concentrations with 5 ml. of Benedict's qualitative reagent and treat as before. Mix 0.1 ml. of 100, 80, 60, 40, 20, and 0 g. per litre concentrations with 5 ml. of Benedict's reagent and treat as before. Transmission of the above concentrations is plotted on semilog

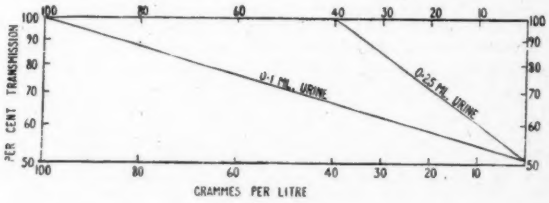

FIG. 2

paper as in Fig. 2 in two separate lines. The reading with 0.25 ml. of 40 g. per litre and with 0.1 ml. of 100 g. per litre should be somewhere about 100% transmission. 0 concentration with either 0.1 or 0.25 ml. should read somewhere between 51 and 52% transmission. From the lines drawn on the semilog paper a table can be prepared similar to the table above.

Determination of Milk Sugar

The proteins of milk are precipitated by adding 1 ml. of sodium tungstate 10%, 1 ml. of $\frac{2}{3}$ N sulphuric acid, and 2 ml. of water to 1 ml. of milk, thus diluting milk to 1 in 5. Then

filter through good-quality filter paper. The filtrate should be clear. Add 0.5 ml. of the filtrate to 5 ml. of Benedict's qualitative reagent and treat as before.

With a Duboscq colorimeter set the unknown at 10 and read the standard. Let the reading be R.

$$\therefore \frac{(40 - R) \times 5 \text{ (dilution)}}{2 \text{ (for using 0.5 instead of 0.25)}} = \frac{(40 - R) \times 5}{2} \text{ grammes per litre}$$

That is, we can read the amount direct as if we are using 0.1 ml. of urine (from the table and Fig. 1).

With the Lumetron 2 ml. of the supernatant fluid is mixed with 8 ml. of water (as usual). The transmission is read on the line of 0.1 ml. of urine. For the amount of sugar in milk divide by 10 to get grammes %. The result is multiplied finally by 67/50, the reduction factor for lactose.

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Medical Memoranda

Surgical Treatment of Rabies

Cauterization of bites by rabid animals, as recommended by the Pasteur Institutes, might advantageously be combined with the modern surgical technique of excision of contaminated wounds. Complete destruction of the virus by cauterization alone is at best fortuitous, and unlikely in extensive, deep, and punctured wounds.

I have recently seen three fatal cases of rabies following dog-bites. One patient received no prophylactic treatment, but the other two (Anglo-Indian children aged 2 years 3 months and 2 years 5 months) had their wounds thoroughly cauterized shortly after infliction. They were also given a full course of anti-rabic vaccine (5 ml. subcutaneously every day for 14 days), although there was an unavoidable delay of two days in instituting vaccine treatment in one case, and of nine days in the other. The risk of rabies in these two patients was admittedly serious, as the bites were facial and of considerable severity.

I suggest the following procedure in the treatment of wounds inflicted by rabid or presumably rabid animals:

(1) Thorough cauterization of the wound with concentrated nitric or pure carbolic acid. This is done immediately, and on no account delayed until preparations for operation have been completed.

(2) The skin is carefully sterilized over a wide area with pure rectified spirit, and then with tincture of iodine.

(3) The aim of surgical treatment is complete excision *en bloc* of all lacerated and potentially infected tissue. All dissection takes place in uncontaminated tissue-planes, with an ample margin of clean tissue to act as a barrier, a fresh knife being used for each wound. Scrupulous care is required to keep contaminated instruments separate (e.g., those used to put tension on the edges of the original wound), and at the earliest moment all contaminated instruments are treated with pure lysol, washed, and re-sterilized.

(4) The surgical wound resulting from excision is then cauterized with the same agent that was used originally. After haemostasis has been secured the wound is left unsutured and dressed.

This technique is open to certain objections. Dr. N. Veeraraghavan, director of the Pasteur Institute, Coonoor (personal communication), observes in experimental animals that rabies is produced as quickly by inoculation of the sciatic nerve as of the subdural space. He raises the question of similar inoculation of nerve trunks during surgical excision of the wound, although it seems likely that this danger could be avoided by immediate cauterization of the surgical wound and careful technique to avoid contamination in the operative field by the surgeon and his instruments.

There seems ground for experimental work to establish the value or otherwise of the above procedure. If proved to be effective, the method would be indicated in cases with strong presumptive evidence of infection with rabies; in cases where the wounds were amenable to radical excision; and in centres possessing adequate surgical facilities. In more remote areas the present method of treating wounds by cauterization alone would continue to be employed. In either case, a full course of anti-rabic vaccine would be necessary.

Kolar Gold Field, India. W. B. ROANTREE, M.D., F.R.C.S.Ed.

Hypnosis and Suggestion in Obstetrics

Below are given the histories of three cases in which use was made of the power of suggestion to the subconscious mind so that the activity of the normal conscious levels and the concomitant highly developed critical faculties were temporarily suspended.

CASE REPORTS

Case 1.—The patient, a primigravida aged 21, was admitted to hospital as an emergency with a diagnosis of obstructed labour, having been in the second stage of labour for six hours after a first stage of about twenty-four hours. On examination rather painful uterine contractions were still present, although they were much less severe than they had been, the vertex was engaged but a large caput had formed, and there was excessive moulding of the foetal head. The cause of the delay appeared to be a relative disproportion between the presenting part and the outlet, together with incomplete anterior rotation of the occiput. The head was fitting extremely tightly in the birth canal and seemed completely "stuck." A condition of light hypnosis was induced and the patient was instructed to relax, which she did sufficiently well to enable the occiput to be rotated more to the front and the forceps to be applied correctly. During delivery of the baby the mother was able to co-operate and use her own expulsive muscles while traction was being made. She later stated that she had had no actual pain but that she felt "like another person." Although the tissues of the perineum were very thick, only a very small episiotomy was required. The placenta was expelled naturally after 20 minutes, and the baby, which cried lustily, weighed just over 10 lb. (4.5 kg.).

Case 2.—A primigravida aged 32 with a twin pregnancy was admitted to hospital as a booked case, having regularly attended the antenatal clinic. Her membranes ruptured two hours after labour pains had started, and progress was very slow, as is often the case with multiple pregnancies, so that towards the end of the third day of labour she was much distressed and exhausted in spite of the administration at intervals of pethidine hydrochloride in doses of 100 mg. each and other sedatives such as chloral hydrate and potassium bromide. The cervix was then a little more than two-thirds dilated but was very oedematous, and the patient constantly reiterated her strong desire to bear down with each contraction. Doubtless this inability to relax properly during the first stage was partly responsible for the oedema and slow dilatation of the cervix. In spite of the presence of painful uterine contractions therapeutic suggestion was attempted, and after about fifteen minutes the patient began to respond and became much quieter and more relaxed. A few minutes later she was sleeping, although strong contractions were still occurring. The suggestion of "No pain" was continued at intervals for another ten minutes or so, and she remained asleep for some hours. When re-examined later, on awakening, her condition was much improved, the cervix being nearly fully dilated and the oedema having disappeared. She then stated that she felt much refreshed and that all she could remember was a feeling of drowsiness associated with a sensation of being "far away—as if I were floating in space." The rest of the labour progressed normally and satisfactorily and both babies were born in good condition.

Case 3.—A primigravida aged 24 was admitted to hospital owing to a prolonged first stage and an impending uterine inertia. She had been in labour for between two and three days and was becoming exhausted and depressed. On examination the cervix was nearly three-quarters dilated and the membranes were still intact. A light hypnotic sleep was then induced and the suggestion made that she would sleep until it was time to "push the baby out." She slept, although slightly restless now and then, for some hours, and soon after waking second-stage contractions began and labour then continued normally and uneventfully.

These three cases illustrate to some extent what can be achieved if the so-called "subconscious mind" can be utilized in aiding the removal of fear and tension and the promotion of relaxation both of mind and of body.

GEORGE NEWBOLD, M.R.C.S., D.R.C.O.G., M.M.S.A.

Reviews

CLINICAL ENDOCRINOLOGY

Clinical Endocrinology for Practitioners and Students. By Laurence Martin, M.D.(Camb.), F.R.C.P., and Martin Hynes, M.D.(Camb.), M.R.C.P. Foreword by Sir Lionel Whitby, C.V.O., *M.C.*, M.D., F.R.C.P, D.P.H. (Pp. 222; 8 plates and 22 text-figures. 15s.) London: J. and A. Churchill. 1948.

There have been many books on endocrinology in recent years, and a fresh one therefore needs to be considered critically. But this work fully justifies itself, and will be of great value to those who need an unbiased survey of the subject in compact form and at a very reasonable price.

This book is a model of conciseness without irrelevance. Within its 220 pages will be found a clear presentation of the present state of orthodox clinical experience in endocrinology. The authors rightly confine themselves to recognized sound knowledge, and speculation and hypothesis are reduced to a minimum. The book is divided into the traditional sections, and at the end of each is a well-chosen list of modern references, the value of which is increased by the inclusion of the full titles of all papers quoted. Perhaps the severest test of a work of this type lies in its handling of the complex disturbances referable to dysfunction of the sex glands. Nearly half the book is devoted directly or indirectly to such disturbances, and a clear account is given of this difficult subject. The uses, and equally the shortcomings, of the sex hormones in therapy are critically presented, and undue enthusiasms are avoided. The relations between Cushing's syndrome and the adrenogenital syndrome are well described. Pseudohermaphroditism is included in the latter section, and the relationship of this to adrenal hyperfunction is lucidly explained. In discussing the relative places of surgery and of thiouracil in the treatment of thyrotoxicosis, the author rightly stresses the importance of considering the social and domestic circumstances and the quality of available surgery.

There are few omissions of importance. The value of urinary calcium excretion in the diagnosis of hyperparathyroidism is not adequately stressed, and references to the recent work of Albright on this disease are not given. But elsewhere the treatment is up to date and well balanced. There is an excellent index, which adds to the value of a book which can be thoroughly recommended to all who need a straightforward guide to modern clinical endocrinology.

CUTHBERT COPE.

PRACTICE OF ENDOCRINOLOGY

The Practice of Endocrinology. Edited by Raymond Greene, M.A., D.M., M.R.C.P. The Practitioner Textbooks. (Pp. 366; 52 illustrations. £2 12s. 6d.) London: Eyre and Spottiswoode (Publishers), Ltd. 1948.

This is one of the *Practitioner* series. It is edited by Raymond Greene, with the collaboration of A. C. Crooke, Donald Hunter, R. D. Lawrence, J. M. Robson, F. F. Rundle, and P. H. Sandifer. As often the case in a work written by several people, authors of the different sections vary greatly in the way they handle their subjects.

Raymond Greene's contributions are scholarly and practical, and pleasantly seasoned with wit. His chapters on the thyroid gland and on adiposity are outstandingly good. The description of thyrotoxicosis is full, and enlivened by short but vivid descriptions of cases; and his account of treatment not only gives a very fair assessment of the relative merits of thiouracil and thyroidectomy but also affords due attention to preventive and psychological factors, including the patient's private worries and the dangers of disciplinarian ward sisters. Little is said about the management of the ophthalmic form of Graves's disease (which can be a major clinical problem), and Ida Mann's views on treatment with thyroid or testosterone are not discussed.

The sections on the pituitary and the adrenal by A. C. Crooke are in an entirely different style. For one thing, they contain more references than are provided by all the other chapters put together. As the book is for general practitioners, to provide them with so much detail and so many references seems rather like giving the complete sixteen-volume *Oxford Dictionary* to a foreign tourist. For example (radiological changes in the chiasmal syndrome, p. 31): "Kornblum and Osmond said that the anterior clinoid processes were elongated and eroded in 37.9% of their cases, and in 23% they were elongated, but otherwise normal. In 18.9% they were affected differently on the two sides. . . . [They] found erosion of the tuberculum in 58.2% of their cases." This standard of detail is kept up for pages on end, smothering the essentials in minutiae.

Among the other contributors, Lawrence writes on diabetes with his usual simplicity and brevity, and in one of the shortest articles of the book manages to include all the major facts and practical points the practitioner could wish for. Donald Hunter and P. H. Sandifer give equally succinct accounts of the parathyroids and the thymus respectively. There are more than fifty excellent plates in the book, and the coloured printing is beautifully done. The book sets a high standard and is a welcome addition to the literature of endocrinology.

RICHARD ASHER.

INTRODUCTION TO ENDOCRINOLOGY

General Endocrinology. By C. Donnell Turner, Ph.D. (Pp. 604; illustrated. £1 15s.) Philadelphia and London: W. B. Saunders Company. 1948.

The author is Associate Professor of Zoology at North Western University, and this determines the keynote of a biological approach. The book "is intended primarily for advanced investigators and practising physicians." The introduction contains a historical review, and the second chapter, on biology, ranges over many zoological species. The chapter on the thyroid is sound and comprehensive, though brief, and includes a consideration of the mechanism of thyrotropic hormone, radioactive iodine, and thiouracil. The renal theory of action of parathormone is well presented. The account of the physiology and biochemistry of the adrenal medulla is particularly good. The adrenocorticotropic factor of the pituitary is not adequately dealt with, when account is taken of the experimental and clinical work of the past two years; the "alarm reaction" is given but a small paragraph. The section on the physiology of the ovary is one of the best contributions to this subject.

On the whole the book is an excellent and sound introduction to endocrinology, providing as it does all the advantages of a comparative morphological approach. Some 160 illustrations and diagrams augment its value and clarity.

S. LEONARD SIMPSON.

PSYCHOBIOLOGY

The Psychology of Behaviour Disorders. A Biosocial Interpretation. By Norman Cameron, M.D., Ph.D. (Pp. 622. 25s.) New York: Houghton Mifflin Company. London: H. K. Lewis and Co.

The psychobiological school of psychiatry, initiated by Adolf Meyer, attempted to interpret the behaviour of psychiatric patients as that of unitary individuals. No symptom could be referred to as solely the effect of, say, a lesion in the brain or the manifestation of an abnormal hereditary tendency; every phenomenon was the product of an interaction between an individual, a psychobiological unity, and the total environment. This teaching provided a valuable corrective tendency, but it has not proved very productive in research. Dr. Cameron's work stems from this school, but takes a more extreme position. Every phenomenon in human behaviour is related to the psychological aspects of social relations. This means a complete break with psycho-analysis, no less than with neurological psychiatry, genetics, constitutional medicine, and physiological pathology. There are no instincts, no conditioned reflexes. In an infant the act of sucking has no reflex basis, it is a manifestation of his attitude to his mother. The special abilities of the surgeon are solely the result of learning and have no basis in innate dexterity. There is no brain pathology for schizophrenia; it can be derived from normal behaviour on the basis of adjustive insufficiency and habit deterioration. Personality is the organization of interlocking behaviour systems that each of us develops through learning processes.

The author sees the world in shades of light and dark and without colour, though his analysis of the factors of strain, the processes of habituation, which arise from human relations

and play their part in psychiatric illness, is often acute and instructive. It is not in fact germane to his case to pretend that this is the whole of the picture, and his thesis would have been much stronger if he had left room for specific effects from specific agents. As it is, he is unable to explain how in indistinguishably different environments one patient becomes an obsessional, another schizophrenic.

ELIOT SLATER.

GYNAECOLOGICAL HISTOLOGY

Gynaecological Histology. By Josephine Barnes, M.A., D.M., M.R.C.P., F.R.C.S., F.R.C.O.G. (Pp. 242; 162 illustrations. £1 10s.) London: Harvey and Blythe.

This small volume contains 162 photomicrographs which are intended to illustrate the histology of gynaecology. The selection has been made with care and is fairly representative. In addition to short descriptions below each illustration Miss Barnes has given a brief résumé of the normal histology of the female pelvic organs with a brief classification of gynaecological affections.

The best feature of the book is the quality of the majority of the photomicrographs, and students should have little difficulty in learning the peculiarities of the different types of histological material if the illustrations are studied carefully. Figures 22, 23, 24, 26, and 63, however, are flat and below standard.

The book is much too short, and is uninspiring. The classification and description of tumours of the ovary is far too elementary and unsound in many ways. The description of affections of the vulva is not up to date. The book reflects none of the erudition of a Robert Meyer, of an Oscar Frankl, or of an Emil Novak, and the price is perhaps too high for a work of this kind.

WILFRED SHAW.

HISTOLOGY FOR MEDICAL STUDENTS

Human Histology. A Guide for Medical Students. By E. R. A. Cooper, M.D. Second edition. With foreword by F. Wood Jones, F.R.S., F.R.C.S. (Pp. 432; 4 coloured plates and 257 in text. £1 7s. 6d.) London: H. K. Lewis and Co. 1948.

This book claims to be a guide; its subject is human histology; and it is written for medical students. Practically all the illustrations are from human material, and for the most part are photomicrographs at low magnification of the kind of preparation given to students in the average histology class. The style of the book is simple and direct. The text is enlivened by short appropriate physiological explanations, and some basic general pathology is included. Each chapter is followed by a short, concisely written practical section. In this, the second edition, the chapter on the blood, marrow, and haemopoiesis has been rewritten. The general character of the book is unaltered. It remains a reliable and companionable bench book of adequate size and compass for the medical student taking an ordinary pass examination.

GEOFFREY HADFIELD.

Dr. Windsor C. Cutting in his *Manual of Clinical Therapeutics* (second edition; pp. 712; illustrated; £1 5s. Philadelphia and London: W. B. Saunders Company, 1948) has tackled with some success the difficult task of presenting encyclopaedic information in a form small enough for the pocket. Without attempting to go into great detail he presents a rational system of therapy, and the book is refreshingly free from the recipes for complicated cough mixtures that are apt to form so prominent a part of similar manuals. The diseases are classified according to aetiology or the system involved; each disease is clearly and concisely described, some of the articles being masterpieces of condensation. Only minor criticisms can be made of the treatment and management recommended. A white cell count twice weekly during thiouracil therapy is now generally regarded as an excess of caution, and it is interesting to read that expense may be a limiting factor in testing the urine and blood during chrysotherapy. The use of D.D.T. in louse infestation is curiously omitted, though it is listed in the appendix of recommended drugs. There are useful sections on poisons and clinical procedures, but the value of those on diet and drugs is limited for the English reader, as the former refers to the American dietary and the latter to the *U.S. Pharmacopoeia*. Without attempting too much, the author has written a useful and readable guide to modern therapeutics.

BOOKS RECEIVED

[*Review is not precluded by notice here of books recently received*]

Current Therapy 1949. Edited by H. F. Conn, M.D. (Pp. 672. 50s.) London: W. B. Saunders. 1949.
A symposium of the latest approved methods of treatment.

Pharmacopoeia of the University College Hospital, 1949. Edited by T. D. Whittet, Ph.C., D.B.A. (Pp. 147. 7s. 6d.) Shrewsbury: Wilding. 1949.
Extensively revised.

Atomic Energy Year Book. Edited by J. Tutin, D.Sc. (Pp. 237. 21s.) London: Temple Press. 1949.
Contains sections on the radioactive isotopes.

Cornell Conferences on Therapy. Edited by H. Gold, M.D., and others. Vol. 3. (Pp. 337. 17s. 6d.) London: Macmillan. 1948.
Verbatim reports of fifteen conferences at the Cornell Medical College.

Symposium de Hematologia y Hemoterapia, 1948. By J. Guash and others. (Pp. 522. No price.) Madrid: "Miguel Servet." 1948.
The Spanish text is provided with summaries in English.

The Dentists Register, 1949. Issued by the Dental Board of the United Kingdom. (18s.) London: Constable. 1949.

Transactions of the Third American Congress on Obstetrics and Gynecology. Edited by G. W. Kosmak, M.D., and N. Rutherford, M.D. (Pp. 412. $9.00.) Oregon: The Western Journal of Surgery Publishing Company. 1949.
Full proceedings of the 1947 Congress.

Public and Personal Hygiene. By F. A. E. Crew, M.D., D.Sc., Ph.D., D.I.H., F.R.C.P.Ed., F.R.S. (Pp. 128. 2s. 5½d.) London: The St. John Ambulance Association. 1949.
Twelve lectures for laymen.

Hints on Prescribing Under the National Health Service Act. By J. B. Primmer, M.B., Ch.B., D.P.H., J.P. (Pp. 51. 3s. 6d.) London: Research Books. 1949.
A short book of prescriptions.

The Mentally Ill in America. By A. Deutsch. 2nd ed. (Pp. 555. 30s.) London: Geoffrey Cumberlege. 1949.
History of the care and treatment of mental patients since colonial times.

The Midwife's Text-book. By R. W. Johnstone, C.B.E., M.A., M.D., F.R.C.S.Ed., M.R.C.P.Ed., F.R.C.O.G., F.R.S.Ed. 4th ed. (Pp. 400. 20s.) London: Adam and Charles Black. 1949.
Further revision has been undertaken in this edition.

The Medical Register, 1949. Issued under the direction of the General Council of Medical Education and Registration of the United Kingdom. (43s.) London: Constable. 1949.
Now published in two volumes for convenient reference.

Evolution of the Forebrain. By G. W. H. Schepers, D.Sc., M.D. (Pp. 212. 50s.) London: John Clark. 1948.
From Johannesburg.

A Manual for Teaching Dietetics to Student Nurses. Prepared by a Joint Committee of the American Dietetic Association. (Pp. 487. 20s.) London: W. B. Saunders. 1949.
Elementary dietetics.

Early Recognition of Disease. Edited by Sir H. Ogilvie, K.B.E., D.M., M.Ch., F.R.C.S., and W. A. R. Thomson, M.D. (Pp. 134. 10s. 6d.) London: Eyre and Spottiswoode. 1949.
A new handbook in the *Practitioner* series.

Collateral Circulation. By D. P. Quiring, Ph.D. (Pp. 142. 25s.) London: Henry Kimpton. 1949.
An anatomical study.

Gods and Men. By Sir R. Gregory, Bt., F.R.S. (Pp. 214. 12s. 6d.) London: Stuart and Richards. 1949.
A discussion on science and religion.

Searchlights on Delinquency. Edited by K. R. Eissler, M.D., Ph.D. (Pp. 456. 30s.) London: Imago. 1949.
Thirty-six papers on juvenile delinquency.

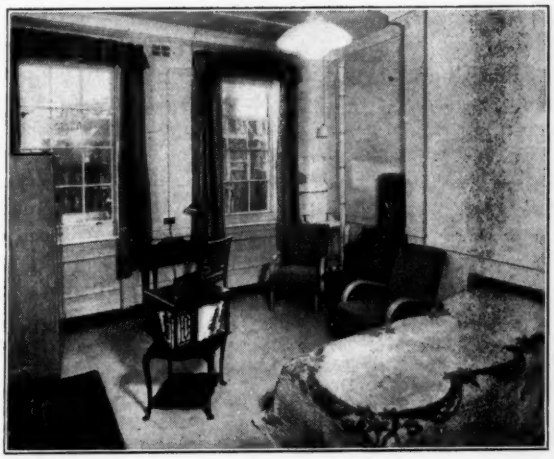
German-English Medical Dictionary. By F. S. Schoenewald, M.D. (Pp. 241. 27s. 6d.) London: H. K. Lewis. 1949.
A new work.

SURGEONS IN RESIDENCE

New Development at Lincoln's Inn Fields

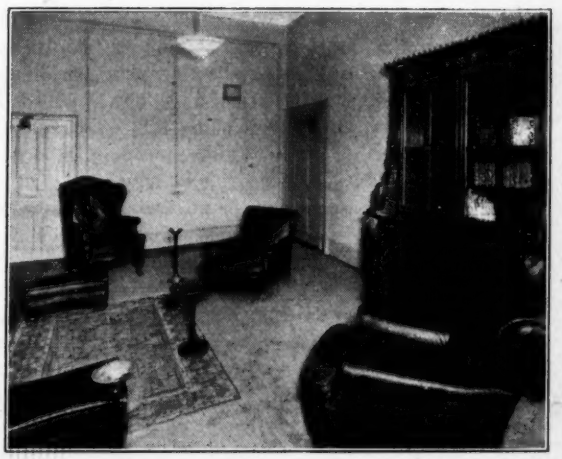
The President and the Council of the Royal College of Surgeons have for some years now been following a policy of providing facilities and amenities for young surgeons, particularly those from the Commonwealth, the U.S.A., and other countries, who come to Britain for advanced study. The need for residential accommodation was obvious if graduates were to be able to make the fullest use of the library, museums, and laboratories of the College and at the same time have the advantages of collegiate life. The importance of providing a collegiate centre for postgraduate students has often been stressed by Lord Webb-Johnson. A step towards the creation of such a centre was taken on May 2, when the first postgraduate students were installed in new residential quarters immediately adjoining the College.

The two houses used for this purpose are Nos. 44 and 45, Lincoln's Inn Fields. They are next to the main buildings of the College, the forecourt of which has been extended to incorporate them. They provide accommodation for 22 students, with separate bedrooms, and include two common-rooms and a study room. The ground floor of No. 44 is occupied by a committee-room, the postgraduate education office, and other administrative offices. The rooms have been furnished with an eye to both taste and comfort, and offer accommodation far superior to that generally available to students. Indeed the difficulties encountered by postgraduate students in finding any kind of suitable accommodation in London nowadays are well known. Some fine paintings have been hung in the common-rooms, one of which also accommodates a handsome bookcase, formerly the property of Sir John Bland-Sutton. The three illustrations here reproduced are of this particular common-room, a typical bedroom, and a general view from Lincoln's Inn Fields, showing the relation of the two houses to the College itself.



Among the first to take up residence are students from Australia and New Zealand, Canada, South Africa, Ireland, and English provincial centres. The hostel will enable its residents to make informal contact with their teachers, whom they might otherwise meet only in the lecture theatre. The College club in the main building will now allow members and residents to lunch and dine together.

Architecturally the houses are interesting. No. 44, built originally in 1638 and rebuilt in 1700, has a fine oak staircase. During the process of redecoration before the opening of the residential quarters the contractors discovered (having previously been warned of its possible existence) a fine painting occupying the ceiling at the top of the staircase. This painting, by Sir James Thornhill (1675–1734) or one of his pupils, has been carefully restored. Thornhill, perhaps best remembered for his paintings at Greenwich Hospital, was the father-in-law of William Hogarth and a great-nephew of Thomas Sydenham. The latter was responsible for launching him on his artistic career, for when Thornhill was sent to London by his impoverished parents Sydenham apprenticed him to Thomas Highmore, sergeant-painter to William III and cousin of Nathaniel Highmore, remembered for his description of the maxillary antrum.



The residents of Nos. 44 and 45 will for the most part be studying for the primary or final Fellowship, but accommodation is equally open to more senior students. The provision of this new accommodation sees the completion of the first stage in the larger scheme of which the Nuffield College of Surgical Sciences will be the ultimate development. The first warden to be appointed is Mr. R. J. Last, lecturer in anatomy to the College.

It is hoped that those who have the privilege of living in the College will be imbued with something of the spirit of the collegiate life of the older universities, and that they will meet the leading teachers of Great Britain and distinguished visitors from other countries. Thus they will make contacts which will be valued throughout their lives.

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THE AMENDING BILL

When the Negotiating Committee met the Minister of Health in November, 1947, one of the matters it drew his attention to was the obscurity of the Act in relation to partnership agreements. The wording of the relevant Section was so ambiguous that no one, not even Mr. Bevan himself, knew what it meant. But at that time he was intransigent and said that the interpretation of this Section would have to be made in the Courts. The Negotiating Committee presented the Minister with a detailed analysis of the consequences that might flow from the various interpretations of Section 35 of the N.H.S. Act of 1946, and the Minister finally had to acknowledge the justice of the Negotiating Committee's contention and appointed the Slade Committee to report on the position and make recommendations. The Amending Bill promised by the Minister a year ago and now laid before Parliament includes the recommendations of the Slade Committee and adds a Clause on agreements with medical assistants. Clause 12 of the Act provides for arbitration in case of dispute about remuneration or conditions of service for those working in the National Health Service. Any difference or dispute will be regarded as a trade dispute within the meaning of the Industrial Courts Act of 1919 and under this the Minister of Labour and National Service has power to refer matters for settlement by arbitration.

In the early months of last year the B.M.A. conducted a campaign against the introduction of a whole-time salaried medical service, which under the present Act would have been possible through the issue of Regulations. It did not accept the assurance of the Minister that this was not the Government's intention, knowing that what one Minister said would not be binding on any other Minister. Mr. Bevan once more bowed before the storm and promised to introduce an Amending Act that would safeguard this position. His promise is now fulfilled in Clauses 10 and 11 of the Amending Bill. Subsequently the Minister agreed to include in the Amending Bill a provision that executive councils should have the right to elect their own chairmen, that the professional member of a tribunal should be one of a panel of persons with suitable experience, and that power should be given to the executive councils to cover the costs of local medical committees by the deduction from practitioners' remuneration of a small sum to meet this. These promises have also been met by appropriate Clauses in the Bill.

The medical profession will be relieved that at last a Bill has been introduced which gives statutory protection against the introduction of a whole-time salaried service and that the ambiguities of partnership agreements have been resolved. Partners who have not joined the Service may enter now and receive compensation for the loss of their right to sell the goodwill of their practices.

There were, however, many more matters which the B.M.A. wished to have included in the Amending Bill, and these were listed in the *Supplement* of April 2 this year. What is disturbing is not so much that nearly all these points have been omitted from the Bill as that the Minister has failed to fulfil his promise to discuss their inclusion with the medical profession. To begin with, the Minister said[1]: "There has not yet been time to work out the actual wording of the new measure, and when he does so the Minister will welcome the help of the profession." In spite of his promise the B.M.A. did not know what were the contents of the Bill until it was published at the end of last week. On May 4 last year Sir William Douglas, Secretary to the Minister, wrote as follows to the Secretary of the B.M.A.: "You will remember that when the Minister saw representatives of the Association recently he said that he hoped that he would have the profession's help when he came to the task of settling the contents of the Amending Bill. . . . In addition, as you are aware, we are also most anxious to begin discussions as soon as possible on the other matters which are still outstanding." On May 25 last year representatives of the B.M.A. met the Minister and on the following day were informed by Sir William Douglas of some of the points which the Minister had agreed to include in the Amending Bill. Sir William Douglas stated that it was "inevitable that there will be found other matters on which adjustment is needed in a measure of this magnitude." He went on to say that it would be necessary to limit the Amending Bill so that it could be passed quickly in order to alleviate the anxiety of those in partnership. As there has been a delay of a year in producing the Bill there has clearly been ample time for the discussion of its contents, but no such discussion has been held since May, 1948. The Secretary of the B.M.A. in November last year asked the Ministry of Health when the Association might be given the opportunity of examining in draft the proposed clauses of the N.H.S. Amending Bill—asked Sir William Douglas, in other words, when it was proposed to fulfil the promises made by Mr. Bevan a year ago. Sir William Douglas replied that it was not usual for the actual drafts of clauses to be discussed except within the Government Departments concerned, and added, "But we hope very shortly to discuss with the B.M.A.—or rather with the Negotiating Committee, I suppose—the proper effect and content of any new legislation on this subject." Mr. Bevan, in reply to a question put by Sir Henry Morris-Jones last December, observed: "This matter of an Amending Bill has been under discussion with the representatives of the medical profession, and when full agreement has been reached—or when full agreement has not been reached—then the Bill will be presented to the House." As the medical profession has, since this statement was made, been given no opportunity to agree or disagree, Mr. Bevan's

[1] *British Medical Journal*, 1948, 1, 742.

observation was pointless. He has again committed a breach of trust with a profession that has loyally collaborated with the Government in operating a Service full of imperfections.

There is no need here to enumerate once more the many matters the B.M.A. had hoped to see included in the Amending Bill. From the point of view of the general practitioner one of the most important of these was the need for statutory confirmation of the Minister's written promise that in areas not closed automatic consent should be given to the practitioner's choice of his partner or assistant. Unless this statutory confirmation is given it will still be possible for the Medical Practices Committee to put a practitioner in the position of having to accept a partner chosen by it. Another matter of importance not only to practitioners, but to patients also, which the B.M.A. wished to have included in the Amending Bill was the right of private patients, who incidentally contribute much to the cost of the Health Service, to obtain drugs and appliances at the public expense. It is most regrettable that in the Amending Bill the Minister has refused to recognize representatives' specialist staff committees which would have analogous functions to those of the statutory recognized local medical committees. It is regrettable, too, that boards of governors and hospital management committees are not to be trusted to elect their own chairmen, although this right has been given to local executive councils. The farce continues of allowing the foreign visitor to obtain free of charge medical services to the cost of which he contributes exactly nothing; the obvious course is that such a visitor should be treated as a private patient, and the Act specifically provides for private treatment by medical men in the Service.

The Minister of Health may, of course, argue that an Amending Bill at this stage should be free of controversial matters so that it may be passed quickly, or at least before the end of the life of the present Government. The medical profession, while approving in general of the present Bill, cannot fail to be disquieted by important omissions from it and will no doubt press for a further amending measure drawn up after proper and full consultation with representatives of the organized profession.

JENNER AND VACCINATION

The story which began with the birth of Jenner two hundred years ago is not yet complete. Dr. E. Ashworth Underwood recalls the early part in the opening pages of this issue. Since Jenner first put his theory to the test the facts accumulated about vaccination are voluminous, but the conclusions to be drawn from them are imprecise, for no controlled experiment has ever been carried out. Furthermore, as Professor Greenwood has written, "The use of this instrument (vaccination) has been one of the factors, but not the sole, perhaps not the most important, factor in modifying the epidemiological history of smallpox during the last hundred years."[1]

[1] *J. R. statist. Soc.*, 1930, **93**, 233.
[2] *Epidemics and Crowd Diseases*, 1935, London.
[3] *British Medical Journal*, 1948, **2**, 1073.
[4] Ibid., *Suppl.*, 1935, **1**, 282.

Jenner published in 1798 the results of his early experiments. His ideas were quickly accepted both in this country and abroad. Even before the end of 1799 many hundreds of Londoners had been vaccinated, and by 1825 it is believed that nearly half the children born in the large towns were being vaccinated. The first Vaccination Act was passed in 1840, seventeen years after Jenner's death. This empowered Boards of Guardians to vaccinate persons free of charge. In 1853 vaccination was made compulsory. The first relaxation of compulsion was contained in the amending Act of 1898, and this was taken a stage further in the Act of 1907; both Acts allowed for conscientious objection. The Local Government Act of 1929 put an end to Boards of Guardians, and their vaccination duties were transferred to local health authorities, though many of these authorities delegated their powers to the public assistance committees, which inherited the Poor Law. The National Health Service Act, 1946, repealed the law requiring vaccination to be compulsory, but left local health authorities with the duty of carrying out vaccination and revaccination both as part of the ordinary child-welfare service and as an emergency public health service for the control of epidemics.

Between 1854 and 1905 the proportion of infants vaccinated was seldom below 70% of those born. By 1914 the figure had fallen below 50%, and for some years before the end of compulsory vaccination in 1948 only about one-third of the infants born in this country were being vaccinated. This decline was not due to the success of anti-vaccination campaigns, though the distaste which some have felt for everything connected with the idea of vaccination has been responsible for a controversy that has simmered for more than one hundred years and boiled over on several occasions. During this time the opposition to vaccination was far from being negligible in quality. For instance, Creighton, who called vaccination "a grotesque superstition," has been described as the most learned medical scholar of the nineteenth century. Bernard Shaw's remark about "an amazing empirical stunt" is the sort of half-truth which irritates more than it enlightens. Most probably the decline in vaccination was due to the freedom of this country after 1902 from epidemics of variola major and to the increasing awareness among the public that vaccination itself was not always a harmless procedure.

Though improved living conditions and advances in medical and sanitary science must have played an important part in reducing the incidence and mortality of smallpox, the discovery of vaccination will remain one of the great achievements in the history of preventive medicine. Professor Greenwood has stated that it can safely be inferred from the evidence that Jenner was directly or indirectly the means of saving many hundreds of thousands of lives.[2] In England and Wales the death rate per million from smallpox in 1856–60 was 180; in 1871–5 (there was a severe epidemic in 1872) the rate was 392; and in 1896–1900 it was 7. Only 28 persons died from smallpox between 1933–46, and among the fatal cases there was no infant under one year of age. Killick Millard[3] has pointed out that in the same period there were 51 deaths of infants from the complications of vaccination.

The effect of vaccination on the incidence of smallpox is difficult to assess. The B.M.A. Committee on Immunization, including Vaccination,[1] which reported in 1935, considered that the relatively incomplete immunity which was a result of the vaccination of most of the infants born in this country up to the beginning of the present century was usually sufficient to limit the volume of outbreaks. It would certainly be foolish to suggest that we have seen the end of deadly smallpox in this country, but those who would accuse the Government of rashness in putting a stop to compulsory vaccination are probably in a minority. Eleven years before the National Health Service Act was passed Greenwood wrote, "Provided we keep our powder dry, that we have always available a completely sufficient supply of potent lymph, I think we may view the passing of even nominally compulsory vaccination with equanimity."[2]

The responsibility for persuading parents that vaccination of infants is still advisable rests with general practitioners and local health authorities. If there is danger of an epidemic the success of the steps taken by local authorities to limit its spread will depend very much on the way they approach the public. A population which is kept well informed will be much more amenable to advice than one which has been left in the dark. The public should be given more information about the importance of revaccination, for belief that vaccination in infancy protects throughout life is still quite common. Since Jenner's day opinion has changed about the duration of the immunity conferred by vaccination, and no dogmatic ruling can be given. It is usual now for members of the Forces to be revaccinated every two years when serving abroad. The methods which port health and local authorities use to control the spread of smallpox have been well illustrated during the last few weeks since the arrival in the Port of London of the s.s. *Mooltan* on the day after the death of a passenger from smallpox. The action taken seems to have been effective, though one case of smallpox notified in a rural area on May 7 may have some connexion (as yet unexplained) with the outbreak among the *Mooltan's* passengers.

Smallpox has been a dreaded disease for hundreds of years, and the greatest encouragement to vaccination has been fear. There is still no specific treatment for the disease, but it seems probable that some chemotherapeutic or antibiotic substance will be found which will attack the variola virus *in vivo*.

RADIOTHERAPY

It is just over twenty years since the National Radium Commission took charge of the radium which the National Radium Trust bought for the nation with part of the fund collected in thanksgiving for the recovery of George V from a serious illness. By the N.H.S. Act the Minister dissolved the National Radium Commission, and by the Amending Bill Section 3 of the Cancer Act, 1939, empowering the Minister to lend money to the Trust, will cease to have effect. To the Commission must be given the credit for the wise development of radiotherapeutic services throughout Britain. One of the results of its activities is that all patients requiring radiotherapeutic treatment for cancer are within reach of a centre where radium and *x*-ray apparatus are under the control of a skilled radiotherapist and where adequate treatment and follow-up records are kept.

One of the last acts of the National Radium Commission was to approve publication of Dr. Margaret Tod's report on "the extent to which cancer patients in Great Britain receive radiotherapy." The report is in three parts: the first is an attempt to assess the number of patients requiring radiotherapy, the second a statement on the number of patients treated in all hospitals which reported to the National Radium Commission, and the third a comparison of the two previous figures with the object of assessing how the needs of the population were met. In order to determine the number of patients requiring radiotherapy it is necessary first to estimate the incidence of cancer and, secondly, the proportion of patients requiring radiotherapy according to the site of the growth. Cancer registration figures from Liverpool, Oxford, and Connecticut show that the cancer incidence appears to be 2,000–2,350 per million. Dr. Tod also uses an indirect method of calculating the incidence of cancer from combined death rates and survival rates: she obtained the data for this from a table of deaths from cancer in 1944 supplied by Dr. Percy Stocks (the death rate being 1,748 per million); from the estimated rates of survival of patients in Manchester, New York, and Liverpool with cancer of accessible sites; and from Sholto Mackenzie's[3] figures of patients with untreated cancer of various types. The incidence is in this way assessed at 2,122 per million. This figure is lower than the registered rate for Oxford but similar to that for the Liverpool area. There is good reason to think that these registered rates are low, and some unpublished figures from Edinburgh suggest that the incidence may be about 2,500 per million. Accuracy of death registration by doctors is not as great as accuracy of cancer registration by those particularly interested.

The need of patients for radiotherapy depends largely on the site affected. Dr. Tod estimates the number of cases treatable by radiotherapy from the rates of incidence and from figures supplied by radiotherapists. The overall figure is 40%, but it varies from 85% for a group including lip, skin, mouth, and uterus, to 0% for the group including stomach, intestine, liver, etc. The total number of patients requiring radiotherapy per million of the population is 840; this is higher than the figure Paterson[3] calculated in 1942, but, as he suggests, it is probably more accurate. The numbers of patients treated in various regions show that the proportion of treatable cases actually treated is about 77%—being 95% in London. The fact that the figure is 127% for one region and 11% for another suggests that the estimated incidence of cancer may be about 30% too low, but there seems no doubt that at least 40,000 new patients require radiotherapy each year and that about 9,000 of them do not get it. This takes no account of radiotherapy for non-malignant conditions and of the retreatment of certain cases; both these needs must be

[1] *An Inquiry into the Extent to which Cancer Patients in Great Britain Receive Radiotherapy*, 1949, Altrincham, price 3s. 6d. net.

[2] *An Inquiry into the Extent to which Cancer Patients Receive Treatment*, 193[illegible] Reports on Public Health and Medical Subjects, No. 89. London: H.M.S.O.

[3] *Publ. Hlth, Lond.*, 1936, **50**.

considered in assessing the requirements in any region. Informative tables are included in Dr. Tod's report showing the facilities at present in existence in England, Wales, and Scotland, and of the cases treated in clinics in this country and in a few abroad. It is emphasized that centralization of treatment, avoiding the inefficient dispersal of facilities, should be the aim, and that no centre treating less than 800 new cases of cancer annually should be encouraged.

The estimate provided by this report of the radiotherapeutic needs of the country must provide a basis for arrangements to be made in the future. The distribution of both apparatus and beds is still very uneven. The less well equipped areas should be brought up to the standard of the better equipped. In this connexion it must be remembered that the safe use of radiotherapy apparatus is expensive, and it might be desirable for the Ministry to allot funds for radiotherapy direct. Budgeting for heavy expenditure by hospitals which already have difficulties in making ends meet may retard development of radiotherapy departments. There is no doubt that many patients alive now would be dead but for the fact that they have been treated by radiation, and no doubt that most cases of cancer die of their cancer in spite of all that can be done by surgery, radiation, and chemotherapy. At present only surgery and radiation can be considered curative: other methods do not cause complete disappearance of cancer. What, then, is to be done for the large groups of patients (with, for instance, cancer of the stomach and lungs) in whom cures are very few? Further development of radiotherapeutic methods and close liaison between radiotherapist, surgeon, and physician are essential if treatment is to be given to all the 40,000 new cases of cancer which need radiotherapy during the course of each year.

STREPTOMYCIN IN TUBERCULOSIS

Workers in Switzerland have made a notable contribution to the literature on the streptomycin treatment of tuberculosis in a massive and profusely illustrated volume[1] containing 20 papers by various authors, of which four are on the theoretical or experimental aspects of the subject and the remainder on the results of treatment in various forms of the disease. Two are on the treatment of meningitis: Löffler and Piotti treated 13 cases by conventional methods with only three ultimately successful results. Dolivo and Rossi, on the other hand, after failure in eight out of nine cases given the usual dosage, treated 13 further patients with much smaller doses in a prolonged but intermittent course combined in the later cases with a sulphone; in six of these patients the result was good. This modification evidently deserves close attention. The writers emphasize the necessity for early diagnosis, without which treatment is liable to fail—even though life is prolonged—owing to the development of cerebral lesions which were never seen when the disease was fatal in about three weeks. These, and in particular the arterial lesions and their consequences, are well described by Zollinger.

The volume reveals a general tendency to regard the indications for streptomycin in other forms of tuberculosis as rather more numerous than is generally agreed: the editors in their introductory chapter give five absolute indications, which include all febrile infections in infants and certain categories of urogenital disease, nine relative indications, and four requiring further study. They mention only four conditions in which treatment is definitely not indicated. In advanced renal disease streptomycin is recognized as being to a large extent only palliative: nothing is clearer than that bacilli in massive caseous lesions, wherever situated, cannot successfully be attacked. There are three papers on the treatment of pulmonary disease, in one of which Tanner commends the instillation of streptomycin solutions into cavities undergoing Monaldi drainage. Russi also advocates local treatment for disease of the middle ear. The whole work is profusely illustrated by excellent photographs and a number of coloured plates.

Whether and when to use streptomycin in chronic pulmonary disease is likely to remain the most difficult question. Levine and his colleagues[2] are very emphatic that it should be used only as part of a concerted plan for the entire conduct of a case—as an adjunct, in fact, to other forms of treatment. Only one course is likely to be of benefit, and if this is given at too early a stage and the disease again becomes active later a valuable resource has been lost. They themselves have used it only in cases with extensive and spreading lesions, and with the sole object of arresting extension and so improving the general condition for the time being that appropriate surgical treatment became safe and feasible. The choice of such cases must always be difficult, but the principle that streptomycin should not be given alone, merely in the hope that it may perhaps do some good independently of other treatment, is clear enough and worthy of serious consideration.

[1] *Streptomycin und Tuberkulose*, 1948, edited by Franconi, G., and Löffler, W. Basle: Schwabe and Co.
[2] *J. Amer. med. Ass.*, 1948, **138**, 808.

NECROPSIES AND TUBERCULOUS INFECTION

The risk of contracting tuberculosis at post-mortem examinations, both for participants and onlookers, may have been underestimated. At Lund University, as elsewhere in Sweden, medical students attend a general pathology course, which includes necropsies on tuberculous cases, before they start their regular clinical work. Prior to wholesale B.C.G. vaccination many of the students were tuberculin-negative on entry, and the Students' Tuberculosis Bureau, by analysing figures of conversions from tuberculin-negative to positive and of tuberculosis morbidity, was able to show an association between these and attendance at the pathology course, quite apart from any association with the period of clinical training.[1 2] Direct bacteriological examinations showed that many objects in the post-mortem room were contaminated 24 hours after examination of the body of a tuberculous patient, in spite of routine cleaning. Following the introduction of stringent precautions at such necropsies there was a decrease in the tuberculin-test conversion rate among the students attending the pathology course. Among these precautions were exclusion of students from actual participation in the post-mortem examinations of known tuberculosis cases, the fitting out of a special necropsy room with improved cleaning facilities, and injection of formalin into the pulmonary artery of the cadaver.

More recent evidence from the University of Rochester medical school in the U.S.A. amplifies the Swedish experience.[3] At this medical school, where there was a high tuberculin-test conversion rate and a high tuberculosis attack rate among the students, tuberculin-testing revealed

[1] Hedvall, E., *Amer. Rev. Tuberc.*, 1940, **41**, 770.
[2] Lindau, A., *Nord. Med.*, 1941, **9**, 858.
[3] Meade, G. M., *Amer. Rev. Tuberc.*, 1948, **58**, 675.
[4] Sixth Annual Report, 1947–48, of the British Medical Students' Association, London.
[5] Montgomerie, R. F., *Lancet*, 1948, **2**, 511.
[6] *Lancet*, 1949, **1**, 78.

that most of their primary infections occurred during the second year, when a 20-weeks pathology course was taken, but before the practical clinical work was started. All these students had opportunities for coming into frequent contact with tuberculous material. At the end of the first year an average of 54% of the students were positive reactors, and the figure rose to 92% at the end of the second year. After exclusion of second-year students from participation in the necropsies of tuberculous cases and from the handling of tuberculous tissues it was found that on an average 36% of the students were positive reactors at the end of the first year, 39% at the end of the second, and 52% at the end of the fourth year.

In British medical schools the students usually do not attend post-mortem examinations regularly until their clinical course has begun, and it would be difficult to assess the separate danger of developing a tuberculous infection as a result of taking an active part at such examinations. However, bacterial spread around the cadaver and post-mortem table should be investigated in order to identify the most risky procedures. Meantime, though the Scandinavian and American results do not constitute proof, they provide grounds for revising the general opinion that the rapid conversion of medical students from tuberculin-negative to tuberculin-positive during their hospital studies, as well as their liability to contract tuberculosis, is solely the result of their contact with living patients. Tuberculous necropsy material must now be regarded as a source of infection, and all possible steps should be taken to reduce the risks to which medical students may be exposed. Few medical schools in this country can claim to conduct post-mortem examinations according to a rigorously strict hygienic routine. The adoption of operating-theatre processes (partially in reverse) should be considered: for the participants, masks (and, of course, gloves) and no smoking on the job; for the onlookers, a glass screen, care in the display of tuberculous viscera when removed from the body, and the application of disinfectants to supplement the customary hosing down with water afterwards. Such precautions should be supported by periodic *x*-ray examination of the students and by tuberculin-testing—procedures which still await full application in some medical schools.[4]

Quite recently a new danger arising from tuberculous tissues has been reported, this time involving a large section of the public. There is little meat for pets in household scraps, and uncooked beef from tuberculous carcasses unfit for human consumption is finding its way from knackers' yards to pet-food stores.[5] The unsuspecting or uninformed purchaser may contaminate her kitchen and endanger the health of her family. Moreover, cats and dogs can contract tuberculosis from eating raw infected meat. The National Veterinary Medical Association has given warning of these risks and has suggested that all meat sold at pet-food stores should be sterilized by boiling before sale.[6] In Birmingham the Corporation has obtained powers to enforce sterilization.

CONTROL OF PARADOXICAL RESPIRATION

The dangers of making a wide opening through the chest wall into the pleural cavity and the method of overcoming them by inflating the lungs through the trachea were known to Vesalius in 1555,[1] but until recent years—long after successful general surgery had become commonplace—surgery in the open thorax was a dangerous procedure attempted only by the venturesome. Brauer[2] ensured adequate filling of the collapsed lung by making the patient breathe gases under positive pressure—so-called "positive-pressure breathing"—while Meltzer and Auer[3] and later Elsberg[4] solved the problem of paradoxical respiration by continuous intratracheal insufflation. This so reduced the alveolar carbon dioxide that spontaneous respiratory movements practically ceased. With the latter method the patient remains adequately oxygenated in spite of the apnoea, and in fact recent work[5 6] shows that oxygen will diffuse through the length of the tracheobronchial tree and into the blood (thus maintaining life) provided the nitrogen is first removed from the upper respiratory tract.

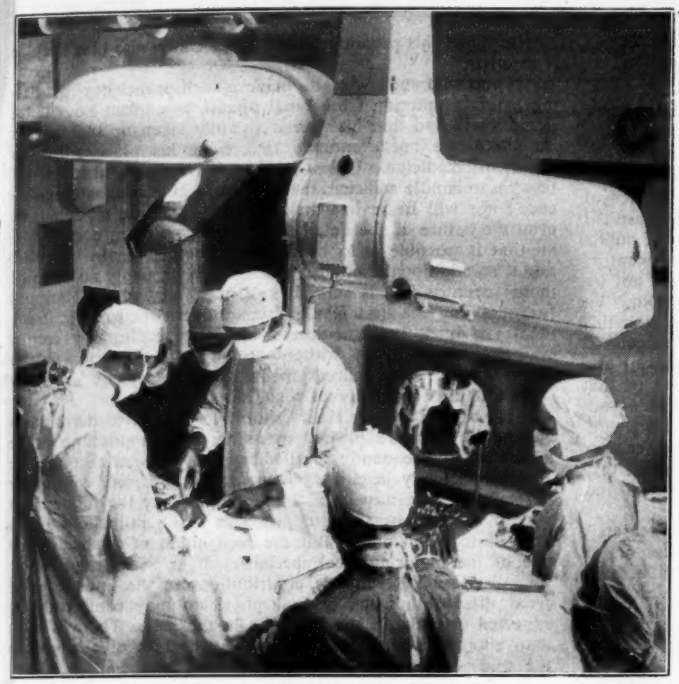
Since the beginning of this century, when thoracic surgery was in its infancy, the methods of maintaining adequate respiratory exchange by positive-pressure breathing and intratracheal insufflation were gradually improved, and anaesthetic machines permitting a very accurate control of positive pressure were developed from Brauer's early pattern. With the introduction of cyclopropane and of the closed-circuit apparatus it was soon discovered how easily apnoea could be induced by a little hyperventilation. This made possible intermittent inflation of the lungs and provided an excellent method of avoiding paradoxical respiration and its evils. Tracheal insufflation soon gave way to this new technique, which became known as "controlled respiration" and is now the method of choice in this country for making an open pneumothorax safe. Filling the lung no longer depends on diaphragmatic movement; paradoxical respiration does not occur, and both lungs may be inflated equally. Positive-pressure breathing and controlled respiration both have their advocates,[7 8] and the fact that both have remained in use for so many years shows that either method, in the hands of experts, will give good results. Recent reports from anaesthetists in this country[9 10] confirm the efficacy and safety of controlled respiration, while good results are claimed for positive-pressure breathing, particularly in the U.S.A., in major operations such as lobectomy and pneumonectomy.[7]

Whichever method is used, there is much interference with the normal processes of respiration: in the case of controlled respiration ventilation is no longer dependent on the metabolism of the patient but on the judgment of the anaesthetist; and with pressure breathing the lungs cannot empty properly and the whole physical mechanism of respiration is upset. Neither method should be attempted except by skilled anaesthetists.

SPECIALISTS' CONTRACTS

During the past few weeks the Central Consultants and Specialists Committee has been considering the Ministry's proposals about terms of service for hospital medical staff in the light of the views received from the periphery through the Regional Consultants Committees. The committee has now submitted to the Joint Committee with the Royal Colleges a statement of the points on which it wishes representations to be made to the Ministry. A further announcement will be made as soon as the negotiations which are about to take place with the Ministry are completed. In the meantime consultants and specialists are again advised not to sign permanent contracts, if they are invited to do so, before the final terms have been published and approved by the profession.

1 *De corporis humani fabrica*, liber septem; cited by Bradshaw, H. H., *J. thorac. Surg.*, 1939, **8**, 293.
2 *Mitt. Grenzgeb. Med. Chir*, 1904, **13**, 483.
3 *J. exp. Med.*, 1909, **11**, 622.
4 *Med. Rec., N.Y.*, 1910, **77**, 493.
5 Draper, W. B., and Whitehead, R. W., *Anesthesiology*, 1944, **5**, 262.
6 Draper, W. B., *et al.*, ibid., 1947, **8**, 524.
7 Livingstone, H., *et al.*, *Arch. Surg., Chicago*, 1947, **55**, 545.
8 Lenahan, N. E., ibid., 1948, **56**, 14.
9 Nosworthy, M. D., *Proc. R. Soc. Med.*, 1941, **34**, 479.
10 Rink, E. H., *et al.*, *Guy's Hosp. Rep.*, 1948, **97**, 48.



A mirror reflects the operative field into the C.P.S. Emitron camera, which is remotely controlled.

TELEVISED OPERATIONS

Demonstration at Guy's Hospital

What is said to be the first permanent installation of television equipment for medical teaching purposes was demonstrated at Guy's Hospital last week. At present four viewing sets are installed at the hospital—one in the surgeons' room, one in the library and exhibition room, and two in one of the lecture theatres. In groups round each receiver some 30 or 40 persons may view an operation from a vantage point "as good as that of the surgeon himself."

The apparatus has been designed by Electrical and Musical Industries, Ltd., of Hayes, Middlesex, in collaboration with the Department of Surgery at Guy's. The viewing sets are standard H.M.V. models, with a 15-in. (37.5-cm.) emiscope tube, slightly modified to work on signals received by cable. The equipment delivers television signals of the standard wave form used by the London television service of the B.B.C., but a higher definition can be made available when required. There is provision for a demonstrator to supplement the surgeon's comments or alternatively to be responsible for the whole description of the operation. This demonstrator may be stationed in one of the viewing rooms, and he is able to select at will the most suitable size of field as the operation progresses.

It is intended to build up a repertoire of standard operations suitable for television and to invite surgeons from hospitals throughout the country to watch the televised operations and comment on the installation. Certain types of operation, such as cervical sympathectomy, are not considered suitable for television as yet, although an image can be obtained. The installation will be mainly for the benefit of postgraduate students and visiting surgeons.

When the camera is mounted above the table a picture is given looking directly down on the operation site, as opposed to the oblique view from the galleries. It is, of course, a disadvantage that transmission cannot take place in colour, but the technical problems of picking out in monochrome the different shades of tissue are being surmounted successfully. Subject to this reservation with regard to colour—which no doubt will be overcome in time—the picture obtained is very good, and the definition is such that the procedures can be clearly followed. Special precautions have been taken to prevent interference from other electrical apparatus in the hospital.

For those interested in television a few other technical details may be added. Transmission is by cable, so that there is no question of an operation being watched by lay people on their home receivers. The camera is completely enclosed and is built in, together with a microphone for the surgeon's sound commentary, as an integral part of the shadowless light unit over the operating table. The whole assembly can be rotated through 60 degrees for operations on an inclined table or moved on an overhead track. A surface reflecting mirror is mounted on the centre of the lamp and at 45 degrees to its axis, so that a view of the operation along the axis of the lamp is presented to the camera. The camera, which requires no special lighting, has a cable which, with the lighting, sound, and control cables, is taken through to a control point in a room alongside the theatre. The whole apparatus in the theatre has been designed so that it may easily be kept clean and sterile (Fig. 1). In the control room the unit is operated by a hospital technician, who by means of a monitor unit can watch the picture. In this room also the lens unit in the camera is operated, with a choice of three magnifications, and the surgeon in the which, with the lighting, sound, and control room which picture he wishes shown, whether an overall field of approximately 20×35 in. (50×87.5 cm.), an approximately life-size reproduction, or a magnified close-up of an area of about 5×6 in. (12.5×15 cm.).

The televised operation has an advantage in spontaneity over the film, but the latter, of course, can be edited whereas the former cannot. The two methods therefore are complementary, and it is considered that television may become important and useful in medical teaching. Certainly the spectators can see more detail in greater comfort than is ever possible in a crowded theatre. The possibilities of television as an aid to medical instruction have long been a matter for conjecture. On a few special occasions in America television has been temporarily installed in an operating theatre to enable groups of surgeons to watch a particular operation, but the installation at Guy's is the first properly engineered permanent equipment, and this was the first occasion on which operations have ever been televised in Europe.

Students and nurses watch the operation on the television screen.

Correspondence

An Unfortunate Precedent

SIR,—Since its foundation some four centuries ago the Royal College of Physicians, through its Comitia, has been consulted by all British Governments on all important problems of public health and medical teaching and practice. The appointment of its actual president to the Awards Committee is thus not an "unfortunate precedent" but a justified historical custom. To reproach Lord Moran because he has been entrusted with this duty and to call the officers of the College, distinguished scientists and upright men, "henchmen" of the President and "inner cabal" of the College is to attack the dignity of that great institution whose role in the history of medicine—not only of British medicine—has been preponderant. I am convinced that most Fellows will resent this attack, whether they have accepted the Health Service or whether, like myself, they wish to maintain the independence and the freedom of medicine. It is not a question of party.

I do not think Dr. C. B. Heald (May 7, p. 819) has accurately described the inner workings of the College, because on all important matters there are lively discussions in Comitia. The "recommendations of the Council" bear usually on secondary matters, and, if they are accepted mechanically, this is due to the fact that the Council has thoroughly studied these questions, whereas the majority of the Fellows come totally unprepared. If Dr. Heald had made his interesting suggestions in committee instead of resorting to the medical press he could be assured of the support of many of his colleagues, and the thanks of all, for rendering the meeting of the Fellows as lively as the dinner that follows it.

In the course of its long history the senior College has faced all medical problems, adapting its policy to changing conditions with an elasticity which is certainly not "archaic." In our days the problems are more acute because, as individual physicians, we have concentrated too much on our test-tubes and microscopes and have neglected social medicine. The task of the College is thus more difficult than it was in the days of Linacre, when it had simply to uphold the Hippocratic and Galenic doctrines against Arab scholasticism, or, as later, to struggle with the University of Oxford for the programme of medical teaching, to consider the seaworthiness of the physicians of the Elizabethan fleet, or to legislate on variolization or hypnotism.

However, the College has to take a stand and contribute to the adaptation of medical practice to our new highly industrialized and mechanized society. History shows that human groups that have not responded to the challenge of changing environment have died out, and the senior College, founded by the most brilliant intellects of the Renaissance and built up stone by stone in the course of five centuries by men of outstanding brain and heart, cannot die out. As in the course of centuries the College changes its mode of action, abandoning the academic ivory tower, it has to come more into the open social struggle. It may be difficult in these conditions to preserve its ancient dignity, but it is not a good thing, not only for British medicine but for world medicine, if in these disturbed times of political and economic passions the role of this solid bulwark of the highest medical standards is made more difficult. The laws of history, little known and even less heeded, warn us against any such action.—I am, etc.,

London, W.1. A. P. CAWADIAS.

Research in Renal Disease

SIR,—While Sir Henry Cohen, as reported in the *Journal* of April 2 (p. 587), grudgingly admits that there is some justification for a man pursuing research in renal disease, it would be interesting to learn upon what grounds he so confidently asserts that there can be no justification for a man confining his practice of medicine to the kidneys. I do not know to what extent Sir Henry's personal experience of this kind of practice entitles him to make this pronouncement, but I can assure him that he is in error.

Anyone who endeavours to achieve such proficiency in treating patients suffering from renal disease as current knowledge permits will find that his time is so fully taken up that he has no alternative but eventually to confine his practice to this branch of medicine. Unless he does it is unlikely that he will be able to handle sufficient material to acquire adequate experience; nor will he realize the unceasing attention to detail, or even the nature of the detail itself, that is so often necessary if all that is possible is to be done for these patients. He will find it an additional handicap that there is probably no hospital in the country that is suitably organized, staffed, or equipped for obtaining the best results from modern methods of treatment. It must be remembered also that nephrology cannot be practised effectively without at the same time engaging in research, for standardized methods of treatment are only successful in a minority of renal disorders.

It is singular that Sir Henry should have selected the kidneys and none of the established specialties for his strictures. The accusation so frequently levelled against the specialist that he is not sufficiently in contact with general medicine can hardly be maintained in respect of the kidneys, where the relationship with other vital organs and processes is too intimate and too obvious to be ignored. But the recognition of nephrology as one of the major medical specialties in no sense implies that we must lose the valuable contributions to the knowledge of renal disease that the general physician may confidently be expected to make in the future as in the past. There is more than enough room in medicine for all degrees of emphasis in the study of, and practice in, renal disorders.

It is common knowledge that patients suffering from renal disease often come under the care of those who have made no serious study of their problems and who, indeed, are not even interested in them. Patients are frequently "written off" on sight, or after a more or less perfunctory investigation, and are hustled out of hospital without systematic provision for their future welfare. This attitude of defeatism is particularly dangerous in undergraduate teaching hospitals, for it is accepted by students and forms the basis of their outlook on renal disease.

What is needed is the provision of postgraduate university hospitals or institutes for renal disease, adequately federated in the general hospital services and based on departments of renal anatomy, physiology, pharmacology, and clinical and experimental nephrology. These hospitals should eventually staff and work in close liaison with subsidiary renal units in other postgraduate hospitals, in undergraduate teaching hospitals, and in some of the larger non-teaching general and appropriate special hospitals. The need, moreover, is urgent, for the training of the necessary medical, nursing, and technical staffs must inevitably take much time. A beginning, however, could be made at once with the establishment of one such centre.

The training of a nephrologist must necessarily be long and arduous. It should include at least six years' postgraduate study, practice, and research in general medicine, and special experience in biochemistry and clinical pathology. I do not believe that the full course could be accomplished in less than eight years after registration.

The problem of renal disease is one of national importance. It concerns the welfare and the lives of a large section of the population, including many young persons. Kidney disease, directly and indirectly, probably causes more deaths in this country every year than cancer, heart disease, or tuberculosis. The training of a sufficient number of competent nephrologists and the provision of adequate facilities for their work are among the most pressing needs in medicine to-day.

In my view Sir Henry has failed to appreciate the magnitude, gravity, and complexity of the problem of renal disease. There is, of course, every justification for those with inclination and aptitude to confine their practice of medicine eventually to the kidneys, and they should be given every encouragement to do so if they find, as most will, that they are thereby enabled to give better service.—I am, etc.,

London, W.1. A. A. OSMAN.

Thymoma Simulating Laryngeal Diphtheria

SIR,—Dr. Alwyn Griffith (April 30, p. 759) has described an instance of what he interprets as a "thymoma simulating laryngeal diphtheria" in a child aged 4½. His account of the patient suggests to me that this was almost certainly an example of acute myasthenia gravis, and that the child's death was not due to pressure caused by the presence of the tumour.

It is not generally known that an acute form of myasthenia gravis occurs in young children, the leading sign being failure of respiration with cyanosis. The condition described by Dr. Griffith would probably have responded dramatically to an injection of "prostigmin," as it did in two children, aged 4½ and 2, under the care of Dr. W. G. Wyllie at Great Ormond Street Hospital for Sick Children a few years ago. I operated on both these children for thymectomy, and the elder one has been well since; the younger one afterwards died in a relapse of myasthenia because I had failed to remove the whole of the gland.

Dr. Griffith's description does not convince me that the organ found in the mediastinum was really a tumour in the sense of being a neoplasm. It may have been simply a large thymus gland, which would normally be of considerable size at the age of 4. Thymic tumours usually become closely adherent to surrounding structures and show an obvious proliferation of epithelial or reticular cells.—I am, etc.,

London, W.1. GEOFFREY KEYNES.

Endocrines and Fibro-Adenosis

SIR,—In his interesting paper on this subject (April 30, p. 750) Mr. H. J. B. Atkins ascribes to me opinions which I do not hold, and I would be grateful for the opportunity of correcting this misapprehension. I am quoted as having advocated androgen therapy for fibro-adenosis, "in the hope that this will prevent the onset of cancer" (*British Medical Journal*, 1938, 2, 319)—a view which I have never held, even in the most optimistic moments, much less propagated. What I actually recommended (and I think I was the first to do so) was the routine implantation of testosterone in the wound after a radical mastectomy in cases of breast cancer as a prophylactic against recurrence, and repeated implantations from time to time—a view substantiated by Adair at a meeting of the Section of Surgery, Royal Society of Medicine, on March 23 (reported in the *Journal* of April 9, p. 631), and others.

In spite of this disclaimer, however, I cannot agree with Atkins that testosterone can be actively cancerogenic in cases of fibro-adenosis. Both theoretical considerations and practical experience are to the contrary, and the one case quoted is most likely, in my opinion, coincidental. It is hoped that Atkins's condemnation will not have the effect of depriving patients of the advantage of a hopeful, if temporary, therapeutic agent.—I am, etc.,

London, W.1. A. A. LOESER.

Diathermy Prong Forceps

SIR,—As the originator of the principle of diathermy haemostats, it is easy to settle the differences between Mr. A. Wilfrid Adams (April 9, p. 631) and Mr. David Aiken (April 30, p. 780). They are both right. In 1924, at the Christie Hospital, Manchester, I first used artery forceps connected by flex to diathermy to seal vessels. From 1932 onwards most of my patients have been connected to diathermy,[1] and two pennyworth of British electricity has done just as well as, and probably better than, four dollars' worth of American catgut. Minute vessels have been closed at a depth of even a foot in the lower abdomen, and a tiny piece of sterile carbon has replaced a ligature, which is always liable to go septic. Haemorrhage, time, and labour have been saved. Wounds have healed better because sepsis has been avoided.

Why the principle has not been more widely used I have never understood. In my long surgical experience, by the use of diathermy I have avoided the tedious tying of millions of ligatures; for example, in a cancer of the breast it is unnecessary to tie more than twelve ligatures, and in a subtotal thyroidectomy five. The technique is easily acquired—far more easily than to learn to drive a motor-car. The simple harmonious use of one foot and one hand is all that is required. But a full knowledge of the dangers of diathermy and the protection of the patient are essential.

As the method advanced, I used one thin flex which could be attached to many instruments of varying depths and type. Mr. Adams has produced another instrument to his liking, and so will any surgeon who uses the principle. Mr. Aiken came as resident to the Christie Hospital during the war, when I could not have diathermy instruments made for special purposes and had therefore to return to flex attached to any instrument by adhesive or insulating tape. He did a great service by publishing[2] my principles in an immature form. He is still not aware that adhesive tape, although boiled, will still retain microbes in its depths, and naturally will occasionally become unstuck. That is why attachment by tape, as described in his letter, may become dangerous. And it is far safer, though possibly a little cumbersome, to use an attachment like that of Mr. Adams.—I am, etc.,

Manchester. WILSON H. HEY.

REFERENCES

1 *British Medical Journal*, 1947, **1**, 897.
2 *Lancet*, 1944, **2**, 212.

A Danger to Public Health

SIR,—The remarks of your correspondent, Dr. G. C. F. Roe (April 30, p. 776), on the spread of smallpox prompt me to draw attention to another point which would seem to require attention. Shortly before the importation of smallpox on s.s. *Mooltan* a certain person who in recent months became somewhat of a national character left this country in a mysterious manner. Despite the fact that his picture had been in every newspaper and periodical over a period of weeks, he was able to leave by an unknown route and without the knowledge of police, emigration officials, or customs. This occurred within a reasonably short interval of the disappearance of aircraft in some numbers and by unknown routes from this country without the knowledge of the authorities, and it is reasonable to suppose that the whole of this illegal traffic has not always been and will not always be in one direction.

In view of the fact that the farthest point in the world is now within the incubation period of the major infectious diseases, illegal entry into this country by air creates a grave risk to the public health. It is suggested, therefore, that everyone should co-operate in preventing a continuation of such traffic in the future, and that offences, when detected, will be met by such penalties as to deter people from committing what may appear an adventurous crime but which may have grave and far-reaching consequences.—I am, etc.,

Brill, Bucks. V. O. B. GARTSIDE.

Treatment of Basal-cell Carcinoma

SIR,—I would like to record my appreciation of the excellent paper on the surgical treatment of rodent ulcer by Sir Cecil Wakeley and Mr. Peter Childs (April 30, p. 737). The authors state that there should be no recurrence with adequate surgical excision and recommend that treatment for all rodent ulcers. I think the authors are to be congratulated on the uniform success of their treatment, which is a tribute to the combination of their good judgment and technical skill.

I have no criticism of their recommendation as it applies to lesions on the neck, trunk, and limbs, where wide excision is relatively uncomplicated, and would merely add that many of the superficial rodent ulcers in these sites run a very slow benign course, and elderly, timid patients may be safely treated by irradiation or, if the lesions are very superficial, by freezing with CO_2 snow for two or three minutes.

Apparently rodent ulcers occurring on the face, especially about the temples, the eyes, and the naso-labial folds, are not so readily treated by simple excision as the authors suggest, and many cases of recurrence after surgery have attended dermatological departments and radiotherapy centres. I have seen a considerable number, some of which had relapsed after two excisions and one after three excisions by a competent surgeon. I do not agree with the authors that the extent of excision necessary is readily gauged, and I believe that the extent of some rodent ulcers, with the presence of neighbouring microscopic

nodules, cannot be discerned with the naked eye. It would also appear that the surgical disturbance of tissue balance has a markedly activating effect upon any residual malignant cells, and relapses after incomplete excision usually run a more rapid course.

It should be remembered that towards the end of the nineteenth century the surgical treatment of rodent ulcers of the face had fallen into considerable disrepute, and the expression "noli-me-tangere" had been applied to rodent ulcers and considerable thought had been given to other measures of treatment. Burning-irons of various shapes were used by the surgeons of the London Hospital instead of excision, and the introduction of radium and *x*-ray treatment was welcomed by the surgeons. In fact Dr. Sequeira was invited to an International Congress of Surgery at Stockholm in 1905 to read a paper on his technique with radium in the treatment of malignant diseases, especially of the skin.

Since that time by far the greater number of rodent ulcers have been treated by dermatologists or radiotherapists. Treatment with the unscreened radium plate, or with *x*-ray therapy alone or after preliminary curettage, is not tedious, nor as a rule is the reaction at all severe, and the resulting scar is relatively inconspicuous. Many elderly patients are much less bothered by non-operative treatment, and in the sites most suitable for wide excision the results of such treatment are almost uniformly satisfactory. It is admitted that, in any large series of rodent ulcers treated by irradiation, recurrence may account for 5 to 10%. The small squamous-celled lesions are not usually more radio-resistant than the true rodent ulcer.

No doubt some further comment will come from radiotherapists with considerable experience in the treatment of these lesions, but as a dermatologist I think the above remarks are fair comment.—I am, etc.,

London, W.1. R. T. BRAIN.

Smallpox Contacts

SIR,—I think that the majority of doctors will agree with Dr. G. C. F. Roe's suggestion (April 30, p. 776) that protective vaccination of travellers before leaving any country infected with smallpox would be the surest safeguard against the introduction of variola major to this country.

I was interested in his treatment of contacts by voluntary isolation in the isolation hospital. With a considerable number of contacts arriving from abroad over the past few years, and depending upon the safeguard of timely vaccination, I have relied upon an immediate home visit, with advice and instructions to report immediately any symptoms or signs, however trivial—a complete examination being made only in exceptional cases. I have not interfered with the liberty of the person to pursue his ordinary avocations, believing that smallpox is not infectious unless or until a rash appears. People from affected countries abroad are well aware of the risks of smallpox, and all are anxious to co-operate in every way.

It may be that stricter measures are desirable in congested towns than in rural areas. I feel that the views of other medical officers would be useful.—I am, etc.,

Guildford, Surrey. J. E. HAINE.

SIR,—From the statement by the Port of London Authority appearing in *The Times* of May 10 about the outbreak of smallpox in the s.s. *Mooltan* and the measures taken by this authority, it would appear that the ship was released from quarantine on Sunday, April 3, and the passengers allowed to disperse after full particulars of all destinations had been given and all relevant local authorities had been informed.

Quarantine, as you will agree, is the limitation of the free movement of contacts until it is certain that they have not acquired the disease to which they have been exposed. As it was not until March 31 that it was strongly suspected that this case of chicken-pox was likely to be a case of smallpox, I think that for the purpose of quarantine the operative date should be April 1, in which case the ship should not have been released from quarantine until April 16 at the earliest.

I cannot agree with the practice of allowing contacts of a virulent case of Asiatic smallpox to mix freely with the general population, no matter how close the supervision is. It is common knowledge that a very large section of our population is unvaccinated, and, now that vaccination is no longer compulsory, this unvaccinated population will grow larger. While such a state of affairs exists in this country it is only fair to the public to insist that quarantine be adequate and complete. I feel sure that much of the present anxiety and alarm in the country to-day would not have occurred if the *Mooltan* passengers had been kept on board until April 16.—I am, etc.,

Launceston, Cornwall. L. RICH.

Ankylosing Spondylitis

SIR,—In his letter (April 2, p. 591) under this heading Dr. F. Hernaman-Johnson asks, "Is their sole resort to be the orthopaedic surgeon, who, after all, deals with the results of the disease rather than the disease itself?" I am sure Dr. Hernaman-Johnson did not intend this sentence to be as disparaging as it sounds.

Fortunate is the patient with ankylosing spondylitis who comes under the care of an orthopaedic surgeon at an early stage in his disease. The latter clearly enjoys an advantage over certain of his colleagues in knowing that he is unable to cure the patient. He also knows that the end-result of the disease is a "poker back," and that there is a grave risk of costovertebral ankylosis and a consequent lowering of resistance to respiratory infection. He knows too that in most cases radium therapy is effective in relieving the patient's pain. He therefore takes steps to ensure that the spine ankyloses straight and to maintain the respiratory excursion of the chest by appropriate exercises until the disease has "burnt out." He will also, with all humility, refer the patient to the radiotherapist. By such means the tragedy of the patient with a "question-mark" spine unable to see more than five yards in front of his feet, can be avoided.

Of patients treated in the orthopaedic department of the Sheffield Royal Infirmary, I quote two examples. One served in the London Fire Service throughout the "blitz," being treated without avail by a variety of medical methods. Happily his spine flexion was controlled in time by a brace, and, now ankylosed, he works actively in an important position. The other is still serving as first mate on an oil-tanker. Although his spine is rigid from sacrum to skull, he stands straight.—I am, etc.,

Sheffield. F. GODSALVE WARD.

Adoption of Children

SIR,—In a court case reported in the newspapers recently a childless couple were bound over for neglecting an adopted child aged 6½ years. The child, adopted at the age of 14 months through an adoption society, proved to be educationally subnormal. Medical examination of children for adoption should at least ensure that mentally subnormal children are not passed as fit for adoption.

At present the examination of such children may be carried out by any medical practitioner, who may or may not be familiar with the norms of mental development in children. I would like to make a plea that examination of children for adoption is only carried out by doctors who have a specialized knowledge of the developmental assessment of children. Only in such a way can the repetition of a disaster as described in the newspaper reports be avoided.—I am, etc.,

London, S.E.13. G. G. JONES.

Dosage of Heroin

SIR,—Dr. J. H. Crawford and Dr. James Ross (April 16, p. 776) are right in emphasizing that in the two alarming cases reported by me (April 9, p. 619) the doses of heroin administered were excessive. The administrator had been led towards excess by three circumstances. (1) The opinion, which certainly has been current, that heroin is a safer and milder drug than morphine. (2) His possession of tubes of heroin tablets 1/6 gr. (11 mg.) issued by a long-established and reliable firm of chemists. (3) His previous experience that this dose had produced little obvious effect. Dr. James Ross's sheet-reasoning that this experience may have related to patients with vigorous metabolism is correct—they were pregnant and parturient women.

I venture to suggest these conclusions. Patients differ considerably in their resistance to the depressing effects of heroin, chiefly according to their metabolic vigour. The margin of safety, never too wide for care, may become narrow enough for anxiety in a patient with lowered metabolism. A large dose of heroin in a much debilitated patient may cause dangerous symptoms. Heroin should not be administered to such a patient without special consideration, and only in reduced doses. Tablets and other unitary preparations of drugs should not be issued containing doses in excess of the official maximum.—I am, etc.,

Birmingham. CRANSTON WALKER.

Approach to the Frontal Lobes

SIR,—The restatement of his views by Dr. P. Glees (April 30, p. 780) seems to leave us less ground for disagreement. However, I am not convinced he has established his main point, that abolition of transorbital lobotomy would accelerate our understanding of other lobotomy processes—or, as he puts it, that "any new blind approach will delay the understanding of the underlying mechanism of mental recovery after lobotomy." No one suggests that the transorbital technique should be used in 100% of cases, and it is difficult to believe that its occasional employment will seriously retard the advance of knowledge. Electro-convulsive therapy is also a treatment where the rationale is not clear, but its empirical use did not stultify research nor delay the present refinements of technique. This is to my mind a more fair analogy than Dr. Glees's comparison of transorbital lobotomy with a blind abdominal operation for the relief of constipation.

It seems better to me to give help where we can rather than withhold it on perfectionist grounds. There is a section of patients which one judges might benefit from psychosurgery and from nothing else, yet at the present level of medical services, and for a long time to come, they cannot be given the staffing and organization demanded by elaborate operative research. Since we have reasonable grounds for believing that the simple and relatively safe procedure of transorbital lobotomy might assist them and that at the worst it is unlikely to do harm, as a temporary expedient, pending the development of more definitive techniques, I see no very good argument against giving it at least a more extended clinical trial.—I am, etc.,

Ilkley, Yorks. MAX VALENTINE.

Shoulder-harness

SIR,—Fortunately it was the need for improvisation and not personal injury and discomfort, as in the case of Sir H. J. Manockjee Cursetjee (April 30, p. 779), which suggested to me an appliance for fractured clavicle or clavicles which would alleviate the discomfort caused by the usual methods.

When such accidents have occurred during the last ten years I have invariably made use of two rubber "deck tennis" rings. One arm is inserted in each, and the shoulders are braced by a strap or webbing band connecting them across the shoulders. They are soft, pliable, and easily washed, and the comparative comfort is endorsed by a patient who had previously fractured the clavicle once and the other twice.—I am, etc.,

Cardiff. J. P. H. DAVIES.

POINTS FROM LETTERS

Hereditary Cheiropompholyx

Dr. S. H. CURRY (Surbiton) writes: I have recently seen a case of hereditary cheiropompholyx which I feel must be very unusual. The case was a male child of 6 months, and on examination he showed a vesicular eruption of the right hand. Some of the vesicles were secondarily infected. I ensured that there was no fungus infection by microscopic examination. I treated the patient with a coal-tar ointment applied to the affected parts, and penicillin injections. The following day I saw the father of the child, and he complained of a similar eruption on the hands from time to time. He said it first appeared in hot weather and was diagnosed in India as cheiropompholyx. Again the base of the vesicles showed no evidence of fungus, and I was thoroughly satisfied that this was a case of cheiropompholyx. He responded well to the same treatment as his child, and both were discharged on the same day, after three weeks' treatment.

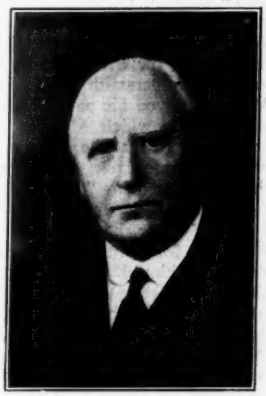
Obituary

Sir FREDERICK MENZIES, K.B.E., M.D., F.R.C.P.

Former Medical Officer of Health and School Medical Officer, London County Council

Sir Frederick Menzies, formerly medical officer of health and school medical officer of the London County Council, died suddenly on May 14 at his home in London at the age of 73.

Frederick Norton Kay Menzies was born in 1875, the son of a civil engineer at Caernarvon, North Wales. He graduated M.B., Ch.B. at Edinburgh University in 1899, proceeding M.D. with distinction in 1903. He took the M.R.C.P.Ed. in the same year, and the fellowship four years later. He had postgraduate experience in the universities of Vienna, Berlin, and Paris, and held resident posts at the Royal Infirmary, Edinburgh; the Brompton Hospital; the Children's Hospital, Great Ormond Street; and at the Western Fever Hospital, Fulham. For five years he was demonstrator and lecturer in the public health laboratory at University College, London. After taking his D.P.H. in 1905 Menzies became in 1907 deputy medical officer of health for the borough of Stoke Newington. He held also part-time appointments as examiner in public health and hygiene to the Board of Education, the City and Guilds Institute, and the Royal Sanitary Institute.



[*Lafayette*

Menzies began his long service with the London County Council in 1909 as a part-time school medical officer. Two years later he was appointed a whole-time assistant medical officer on the Council's staff. By 1914 he had become principal assistant medical officer, and in 1926 he succeeded his chief, the late Sir William Hamer, as medical officer of health and school medical officer. His main task in 1911 was to organize the first of the five areas—east and north-east London—into which the county was divided for the purpose of the school medical service. A year later he drew up the scheme for the diagnosis and treatment of tuberculosis, and during the war of 1914–18 the scheme for the provision of facilities for the diagnosis and treatment of venereal diseases. Menzies was also responsible in those early years for all the work in connexion with maternity and child welfare, infant life protection, and the midwifery service. Just before his appointment as chief medical officer there came a short period of broken service under the L.C.C. In 1924 Menzies resigned his position as a principal assistant medical officer and was appointed to the temporary post of consultant to the Council in connexion with its tuberculosis and venereal diseases schemes. During the ensuing 21 months he undertook a great deal of work on behalf of the Voluntary Hospitals Commission, the joint Council of the British Red Cross Society and the Order of St. John, and the United Services Fund. These three organizations at that time were either distributing or had recently distributed large grants of money, arising out of war funds, to voluntary hospitals throughout England and Wales. His visits of inspection took him to all kinds of hospitals and convalescent homes in different parts of the country and was a valuable, though an unintended, preparation for the new duties that awaited him in London within the next few years. His return to the full-time work of the Council came about owing to representations which were made by prominent members of that body who realized that great hospital developments were impending. They felt that the enlarged responsibility which would fall to the Council called for an officer in the public health department who had had experience in large-scale hospital administration and organization. Mr. Neville Chamberlain, then Minister of

Health, had brought forward just at this time his provisional proposals for the reform of the Poor Law. These proposals were eventually embodied in the Local Government Act, 1929. Menzies agreed therefore to rejoin the Council's service at the end of 1925, when Sir William Hamer retired.

Menzies undertook then the preparatory work needed in view of the approaching legislation. Under the Act of 1929 the whole of the general and special hospitals and medical services of the metropolitan boards of guardians and the Metropolitan Asylums Board were taken over by the L.C.C. A new hospital authority came into existence overnight on April 1, 1930, and with such smoothness was the transfer accomplished that hardly any of the 20,000 staff or the 42,000 patients realized that anything unusual had occurred. About 80 hospitals and other institutions came under Menzies's direction and control. But that was only the beginning, and as the hospital service went on developing, its efficiency increasing year by year, it became the largest service under unified control in the world.

The work of building up an efficient department both for the public health and for the hospital services of London continued steadily. An important step forward was taken with the establishment of the British Postgraduate School and its attachment to the Hammersmith L.C.C. Hospital, and in this development Menzies played his part. Then in 1939 the war brought about a disruption which Menzies felt deeply. Perhaps he took a too sombre view when he saw what had almost been his life-work frustrated. In a private letter at the time he spoke of the service as being "completely smashed up as a unit organization," and of "a tragic end to a long career in the service of London." He had suffered under a handicap of physical infirmity for some years, and on several occasions he had described himself as a very tired man and had expressed his desire to be released. He therefore, after nearly fourteen years at the head of the L.C.C. public health department, tendered his resignation, which took effect on his sixty-fourth birthday, Nov. 2, 1939. The Emergency Committee of the Council, which owing to the war was then in charge of all the Council's business, in accepting the resignation, reported that "it was in no small degree due to the preliminary work and foresight of Sir Frederick Menzies that the transfer of the hospitals was effected so smoothly." The report added: "His retirement will deprive the Council of the services of an officer in whom it has justifiably placed the highest confidence. The strength and graciousness of his character and personality have won the respect and esteem of the members of the Council and of the members of his staff both at the central office and at the hospitals." The Council added five years to his period of pensionable service as a mark of its special regard, and when he bade it farewell high tribute was paid to him by the leader of the Council, Mr. Herbert Morrison, who declared him to have been one of the greatest chief officers the L.C.C. ever had.

Among the many offices which Sir Frederick Menzies held at one time or another outside his Council work were the chairmanship of the Central Council for Maternity and Child Welfare, membership of the Council of the National Association for the Prevention of Tuberculosis, and chairmanship of the committee of management of its Burrow Hill Colony. He was a member of the board of governors of the London Hospital and of Queen Mary's Hospital, Roehampton. He represented Great Britain at the international congresses of Red Cross Societies. The Government committees upon which he served included the Trevethin Committee of inquiry into venereal diseases, the Ministry of Health Committee on the training and employment of midwives, the Home Office Advisory Committee on the scientific investigation of crime, and the Interdepartmental Committee on nursing services. He was a member of the Voluntary Hospitals Commission from 1923 to 1928, and a member of the Committee of Reference of the Royal Colleges dealing with the recruitment and allocation of consultant staff for war service in 1939. For years he served on the Central Midwives Board and the General Nursing Council. Many honours and decorations came his way. He was created K.B.E. in 1932, and in 1937 was one of the several honorary physicians to the King appointed from members of the profession engaged in public health work. He became a Knight of Grace of the Order of St. John of Jerusalem in 1934. In 1932 he was elected F.R.C.P. under the by-law which admits to the fellowship a certain number of persons, not members of the College, who have distinguished themselves in any branch of the science or practice of medicine. In 1941 the College awarded him its Bisset-Hawkins gold medal for his work in the public health field. He was a Fellow of the Royal Society of Edinburgh, and in 1934 he received from the Royal College of Physicians of Edinburgh the Cullen Prize awarded every four years "for the greatest benefit done to practical medicine." In the previous year he received the honorary LL.D. of his old university on the occasion of the 350th anniversary of its foundation, when only one nomination was allotted to each of the various faculties, and he was chosen as representative of medicine, the Public Orator describing him as "one of the foremost exponents of preventive medicine in this country."

In his social as well as in his public life Sir Frederick Menzies was a forceful and decisive but very likeable personality. At his country home in Norfolk he revealed himself as something other than the dominant high official of County Hall; here he was a gentleman farmer, finding his recreation in gardening, farming, estate management, and country sport.

Sir Allen Daley writes: Sir Frederick Menzies was probably the greatest hospital administrator which this country, or indeed any other, has ever known. He set himself the task of welding the hospitals of the Metropolitan Asylums Board and those of the 25 Metropolitan boards of guardians into a comprehensive hospital service for London which would be the finest as well as the largest under local government administration in the world. Many of the hospitals were almost obsolete, and the standards of staffing varied greatly; the economic crisis of 1931 added to his difficulties. Nevertheless, by the time that he retired in 1939 he had made substantial progress towards the implementation of his plans, and had it not been for the war his ambitions would by now have been fully attained. He had had long experience in the best voluntary hospitals and remained actively associated with many of them. He was active in the affairs of the King Edward Fund and the Nuffield Provincial Hospitals Trust. This close association with the voluntary hospital world helped substantially his organization of the municipal hospitals and his efforts to reach a working arrangement with them. Menzies had no patience with recent changes in the hospital world, and enlivened discussion by many caustic comments upon them. He had enormous influence and prestige at County Hall. He was not dependent financially on his official position, and this enabled him to take a strong line whenever he felt that this was necessary. He was a genial but exacting chief. He left a great deal to his staff, but always supported them when they ran into difficulty. His knowledge of when to press forward with a scheme and when to defer it until a more propitious moment was uncanny. At heart Menzies was a countryman. He was an expert in estate management, and nothing gave him greater pleasure than a day in the open air with a gun and a dog. This form of recreation, however, had been curtailed since 1934, when he had a serious illness as a result of which he could not walk more than a quarter of a mile without resting. Since he sold his Norfolk estate he had lived in London except for the war years, when he returned to his native Caernarvonshire. For the past few years he had lived quietly in Kensington. In March he went to Port Said to see there the British Hospital, of the committee of which he was chairman. He developed pneumonia on the way back, and never completely regained his strength. His former colleagues mourn the loss of a great-hearted friend and a truly great man. He left a mark on the public health and hospital services of London which can never be effaced. Our deepest sympathy goes to his widow and to his son and daughter. His elder son, a regular soldier, was killed soon after the landing in Normandy in 1944.

W. N. WEST-WATSON, M.D.

Dr. William Norman West-Watson died at his home in Bradford on March 20. He was born at Birkenhead, and graduated M.B., Ch.B. at Glasgow University in 1903, proceeding M.D. in 1908. He was house-surgeon to Sir Hector Cameron, and later R.M.O. to the Jaffray Hospital, Birmingham. As a medical student he served in the South African War with a Scottish hospital unit, and was awarded the Queen's Medal with clasps. Before starting in general practice he was ship surgeon

to the Union Castle Line in 1908. On the outbreak of war West-Watson joined the R.A.M.C. and went to France in 1915. In this year he was appointed honorary assistant physician to the Bradford Royal Infirmary, becoming later physician and consultant. He joined the St. John Ambulance Brigade as corps surgeon, and was later assistant commissioner for the Midland Area (West Riding). He was made a commander of the Order of St. John of Jerusalem in 1946.

West-Watson will be best remembered for his work in connexion with the British Medical Association. He was a tower of strength to the Bradford Division, of which he was secretary from 1920 to 1932. He kept alive locally interest in the work of the Association. Many will recall the annual meeting held in Bradford in 1924, which owed much of its success to West-Watson's administrative ability and genius for organization. He was honoured the following year at Bath by being made vice-president of the Section of Medicine. A member of several central committees from 1921 onwards, and a member of Council from 1930 to 1943, he attended fourteen representative meetings between 1921 and 1938. He was chairman of the Bradford Division in 1933–4, and president of the Yorkshire Branch at the time of his death. At the meeting of Council last week Dr. Dain paid tribute to the work West-Watson had done for the Association, locally and centrally, for over twenty years.

When his full and active life ended, West-Watson was deputy-chairman of the Bradford Executive Council. He never spared himself, and even his holidays were few and short, and mostly devoted to golf. He played a good game, and up to recently had a handicap of ten. No record of his life would be complete without mention of his work for St. Luke's Church, Bradford. He was a regular attender, a warden, and gave characteristically devoted service. West-Watson suffered a cerebral haemorrhage in January last, made a study of his disability, and won through to attend meetings of the Executive Council and of the Division. Only a fortnight before his death he spoke at one meeting with his customary force and lucidity. Truly he died in harness. West-Watson never shirked responsibility, and when in the process of time he handed over his duties to others he continued to give freely of his ripe experience and wisdom. He owed much to his wife, who was always a gracious hostess on the many occasions when they dispensed hospitality. He is survived by her, three sons, and a daughter. All three sons served in the recent war.—G. P.

OWEN W. RICHARDS, C.M.G., D.S.O., D.M., M.Ch., F.R.C.S.

Mr. Owen William Richards, one of the distinguished surgeons of the 1914–18 war and later director of the Egyptian Government School of Medicine in Cairo, died at his home in Bideford on April 18 after a long and distressing illness. Owen Richards was the son of the Rev. H. W. P. Richards, Prebendary of St. Paul's. He was born at Isleworth vicarage on Sept. 30, 1873, and there he passed his early boyhood until he went to Eton as a King's Scholar. At New College, Oxford, he obtained first-class honours in physiology and became Wykeham Prize Fellow. He was then a student of Guy's Hospital, where he graduated in 1902, proceeding M.D. in 1905 and taking the F.R.C.S. in the same year. His studies were interrupted for a time by the South African War, when he served as a dresser and gained the Queen's Medal with three clasps. In 1905 Richards was appointed professor of clinical surgery at the School of Medicine in Cairo, and there he was responsible for some outstanding work. He was accustomed to ride out to the military hospital of the Egyptian Army at Abbassia, and here he employed his leisure hours in practising operations on the intestines of a cow in order to perfect his technique. He did woman service in Cairo for the next nine years, and then on the outbreak of war in 1914 he retired from the Egyptian Service and took a commission in the R.A.M.C. He was posted to Versailles as a subaltern, and there he was found by Sir Arthur Sloggett and promoted to captain. His surgical skill soon became apparent, and by 1917 Richards was a colonel and finally a consultant surgeon and a member of the advisory council of the D.G.M.S. in France. He won the D.S.O., was appointed C.M.G., and was three times mentioned in dispatches. He did splendid work at No. 6 C.C.S. at Merville and also in Béthune and Arras. He told Sir Cuthbert Wallace and Sir Anthony Bowlby that if only he were given some extra equipment and placed nearer the front he thought he might do good work on abdominal cases close to the line without giving them the trying journey back to a clearing station before operation. His request was granted, though he was told, of course, that no sisters could be risked so far in advance; but the extra equipment and some additional orderlies made the arrangement he suggested possible, and in these circumstances some of his best work was done. After the war Richards returned to Egypt as director of the medical school and hospital at Kasr-el-Aini, being decorated later with the Order of the Nile (Second Class) for his services to medical education. He left the service of the Egyptian Government in 1924 under the arrangements made when Egypt became independent. In 1927 he settled at Downes, near Bideford, where he could indulge not only in his favourite sport of yachting but in the art of forestry. He planted many trees and supervised their growth; so much so that a forestry inspector once said that among small estates Downes was "one of the show places so far as forestry was concerned." The sympathy of many friends and colleagues will be extended to Mrs. Richards and her daughter.—S. L. C.

The Services

INDIAN MEDICAL SERVICE DINNER

The annual dinner of the Indian Medical Service will be held at the Connaught Rooms, Great Queen Street, Kingsway, London, W.C., on Wednesday, June 15, at 7 p.m. for 7.30 p.m., when the chair will be taken by Major-General Sir Gordon Covell. The cost of a ticket to subscribing members of the dinner club is 16s. 6d. and to others £2 2s. These charges cover drinks before and during the dinner, cigarettes, and gratuities to waiters. If possible full evening dress, with decorations, should be worn, the alternative being dinner-jacket, with which miniatures may be worn, or Service dress. Applications, with remittance, should be sent to Mr. A. W. Brown, of Grindlays Bank, Ltd., 54, Parliament Street, London, S.W.1, as early as possible.

Medical Notes in Parliament

Special Rations for Invalids

Answering Mr. DRIBERG on May 11, Dr. SUMMERSKILL announced that the Food Rationing (Special Diets) Advisory Committee had reviewed the present meat ration in relation to the needs of invalids and had recommended that no extra meat rations additional to those already allowed need be granted for diabetics or for cases of spontaneous hypoglycaemia. They were satisfied that the protein available in the present allowances of meat and cheese was quite adequate to construct any kind of diabetic diet. The Committee had also recommended that one further extra ration of meat should be allowed in cases of nephritis with gross oedema and gross albuminuria, for both types of hepatitis, and in cases of steatorrhoea.

Eyes and Ears.—It is estimated that up to March 31 about 5,620,000 sight tests had been made under the National Health Act. It is not known how many of these were examinations for the first time. About 19,000 patients in England and Wales have been supplied with Medresco hearing-aids since July 5, 1948. The number needing such aids is not known, but is not likely to be less than 150,000.

Leprosy.—Replying to Mr. HUBBARD on May 13 Mr. BEVAN said he was considering making leprosy notifiable. It was not notifiable at present, and reliable information about the number of cases was not available. There was one leper hospital in England, run by a voluntary body, which could accommodate 13 cases and had 12 there now. Arrangements were being made to supplement this by another provided as part of the National Health Service.

The two Sides of the Ancillary Staffs Council of the Whitley Councils for the Health Services have agreed that domestic staffs directly engaged in the care of smallpox and typhus patients, and who therefore have to be isolated and to undergo other inconveniences which the work involves, shall receive a 50% increase in wages while so engaged.

No. 17

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended April 30.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1949					1948 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever	32	1	18	3	2	57	5	18	5	1
Deaths		—	—				1	—		
Diphtheria	98	20	20	6	8	134	16	49	8	7
Deaths	1	—	—	—	—	2	—	—	—	—
Dysentery	38	4	35	1	15	119	26	57	—	—
Deaths				—	—				—	—
Encephalitis lethargica, acute	—	—	1	—	—	—	—	1	—	—
Deaths		—					—			
Erysipelas			21	7	4			27	13	4
Deaths		—					—			
Infective enteritis or diarrhoea under 2 years				37					32	
Deaths	26	3	3	2	1	30	4	9	7	—
Measles*	11,436	1541	513	255	171	10,169	1101	228	113	62
Deaths†			1	1	—			1	—	—
Ophthalmia neonatorum	44	2	6	—	1	62	4	15	2	2
Deaths										
Paratyphoid fever	1	—	1(B)	—	—	3	1	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Pneumonia, influenzal	453	21	13	9	15	546	33	3	13	7
Deaths (from influenza)‡	39	2	2	1	—	7	—	—	2	—
Pneumonia, primary			162	33				201	39	
Deaths	176	22		9	10	155	23		8	5
Polio-encephalitis, acute	1	—				—	—			
Deaths							—			
Poliomyelitis, acute	14	1	—	2	—	13	1	1	—	—
Deaths§	—	—				1				
Puerperal fever		—	10				1	10		1
Deaths										
Puerperal pyrexia‖	80	7	8	1	—	112	7	11	—	2
Deaths		—					—			
Relapsing fever	—	—			—	—	—			—
Deaths										
Scarlet fever	785	66	145	60	29	1,538	104	259	37	41
Deaths†			—	—	—			—	—	—
Smallpox	—	—	—	—	—	—	—	—	—	—
Deaths				—	—				—	—
Typhoid fever	6	1	—	2	—	12	—	1	—	—
Deaths	1	—	—	—	—	1	—	—	—	—
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths				—	—				—	—
Whooping-cough*	2,905	167	249	153	88	3,684	253	37	55	15
Deaths	9	—	1	2	—	4	—	—	1	—
Deaths (0–1 year)	261	33	32	30	18	295	47	54	21	13
Infant mortality rate (per 1,000 live births)										
Deaths (excluding stillbirths)	4,657	670	541	214	125	4,150	671	562	174	112
Annual death rate (per 1,000 persons living)			10·9	13·3				11·3	10·9	
Live births	8,200	1394	1039	488	250	8,049	1291	1001	413	275
Annual rate per 1,000 persons living			20·8	30·2				20·2	25·8	
Stillbirths	212	32	37			200	25	28		
Rate per 1,000 total births (including stillborn)			34					27		

* Measles and whooping-cough are not notifiable in Scotland, and the returns are therefore an approximation only.

† Deaths from measles and scarlet fever for England and Wales, London (administrative county), will no longer be published.

‡ Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

§ The number of deaths from poliomyelitis and polio-encephalitis for England and Wales, London (administrative county), are combined.

‖ Includes puerperal fever for England and Wales, Eire, and Northern Ireland.

EPIDEMIOLOGICAL NOTES

Typhoid Fever at Crowthorne

Further cases of typhoid fever associated with the Crowthorn Berkshire, outbreak have been found at Ottershaw and Didco The total of confirmed cases is now 39, and two of these ma prove to be secondary infections.

The foodstuff suspected of carrying the infection was on sa in the village on April 15, 16, and 19, and was all consumed i that period. The outbreak was self-limiting. The source still under investigation.

A controlled trial of chloromycetin (chloramphenicol, Park Davis) is in progress on patients in infectious diseases hospita at Winchester and Mogden, Middlesex. The reports will n be published for some weeks, but there is every reason to believ that the encouraging results obtained by Woodward and h colleagues[1] will be confirmed by the present investigation There were no undesirable side-effects from the use of the dru

At Maidenhead 7 patients in hospital have received "ther peutic anti-typhoid (Vi+0) serum (Felix)," which appears have influenced the third week of the disease.

Smallpox

The unvaccinated woman admitted to the Liskeard Smallpo Hospital on May 7 developed a semiconfluent rash and severely ill. Three close contacts, all unvaccinated until fi days after first contact, agreed to precautionary isolation in th Liskeard Smallpox Hospital. It was reported on May 16 th all three are sickening, and smallpox is expected to develop two of them. In the third case vaccination after contact ma have influenced the course and resulted in an infection witho eruption.

A suspected case was admitted to the Ashey Smallpox Ho pital, near Ryde, Isle of Wight, on the evening of May 1 This was on the third day of a severe illness, and the patie showed a confluent macular rash with the characteristic distrib tion of smallpox, except for a striking "butterfly" rash on th face. There was early vesiculation of some of the macules. O the fourth day there was extensive pustulation, and a diagnos of acute disseminated lupus erythematosus was made. A nega tive complement-fixation test for variola-vaccinia was reporte from the Central Public Health Laboratory on May 16. Con firmation of this negative result by egg culture is awaited.

Although several suspected cases have been seen elsewher in England and Wales the only confirmed focus of infection at Liskeard, Cornwall. The circumstances are in no way di turbing, but there is still a remote possibility of further cas of smallpox appearing, and special vigilance is necessary.

Discussion of Table

In *England and Wales* a decrease was reported in the notific tions of measles 2,078, acute pneumonia 306, scarlet fever 16 and dysentery 14. There was an increase in the incidence whooping-cough 359.

The largest falls in the notifications of measles were Yor shire West Riding 236, Surrey 226, Southampton 171, Middl sex 160, London 158, Sussex 153, Kent 132, Derbyshire 12 and Oxfordshire 114. The only notable change in the inciden of scarlet fever was a fall of 47 in Lancashire.

The largest increases in the notifications of whooping-cou were Derbyshire 73, Kent 52, and Warwickshire 41.

An outbreak of dysentery affecting 8 persons was notified Buckinghamshire, Aylesbury R.D. In Lancashire 10 cases we notified.

In *Scotland* large increases were reported in the notificatio of measles 248 and whooping-cough 130, while decreases we recorded for acute primary pneumonia 107, scarlet fever 2 and diphtheria 13. Notifications of diphtheria were down the record low level of 20; in Glasgow there were 14 few cases notified than in the preceding week. The increase in th incidence of dysentery was contributed by Glasgow, where t notifications rose from 11 to 23.

In *Eire* decreases in the notifications of measles 68 and scarl fever 35 resulted from a decreased incidence in Dublin C.B.

In *Northern Ireland* an increase of 38 in the notifications whooping-cough was the only large change in the trends infectious diseases. This increase was confined to Belfast C. and Co. Antrim.

Quarterly Returns for Northern Ireland

Births during the December quarter were equivalent to rate of 20.2 per 1,000, which was 0.3 below the rate for th preceding December quarter and 1.5 below the average f

[1] Woodward, T. E., Smadel, J. E., Lee, H. L., Green, R., a Makekar, D. S. (1948). *Ann. intern. Med.*, **29**, 131.

the fourth quarters of the five years 1943–7. Infant mortality was 44 per 1,000 registered births and was 18 below the average of the fourth quarters of the five preceding years. Maternal mortality was 1.6 per 1,000 births and was 0.8 below the five years' average. The general death rate at 10.9 per 1,000 was 1.2 below the five years' average. The death rate from tuberculosis, 61 per 100,000, was the lowest ever recorded, except for the December quarter of 1947, and was 12 below the five years' average.

For the whole of 1948 the birth rate was 21.9 per 1,000, a decrease of 1.4 on 1947 and 1.2 below the average of the five preceding years. The death rate, 11.3 per 1,000, was the lowest ever recorded in Northern Ireland. The infant mortality, 46 per 1,000 live births, was also the lowest ever recorded, being 7 below the rate for 1947, the previous lowest level.

Week Ending May 7

Notifications of infectious diseases in England and Wales during the week included: scarlet fever 898, whooping-cough 1,053, diphtheria 87, measles 9,217, acute pneumonia 494, cerebrospinal fever 21, acute poliomyelitis 13, dysentery 59, paratyphoid 3, and typhoid 37.

Medical News

The Centenary of the Brompton Hospital

It is hoped to hold a dinner in November of this year to celebrate the centenary of the Brompton Hospital. All those who have been on the medical staff or residents of the hospital who would like to be present at the dinner are asked to send their names and addresses to the House Governor, who will in due course give them further details of this notable occasion.

Honorary Fellow

Professor Grey Turner has been elected an Honorary Fellow of the American Surgical Association.

Irish Medical Graduates

A general meeting of the Irish Medical Schools and Graduates Association was held in the South Kensington Hotel, London, on April 21. This association of Irish medical men was inaugurated in 1878 and is the oldest Irish medical society in England. It has in its gift the presentation of the Arnott Memorial Medal, and among its recipients have been many famous Irishmen. An Arnott Memorial Medal was presented by Colonel George Moore to the president of the association, Mr. Johnston Abraham. It was unanimously agreed at the meeting that the association, which has held no functions since 1938, should resume its activities. Those qualified to become members and wishing to join are asked to write to the secretaries, Dr. J. Bodkin Adams, 6, Seaside Road, Eastbourne, or Mr. W. McKim H. McCullagh, 149, Harley Street, London, W.1.

Committee on Radioactive Substances

Sir Henry Dale, O.M., F.R.S., has been appointed chairman of the Radioactive Substances Advisory Committee, which will advise on protective measures against radioactivity. The committee has been appointed by four Ministers—the Minister of Health, the Secretary of State for Scotland, the Minister of Supply, and the Minister of Health and Local Government for Northern Ireland—to advise the Ministers on measures to safeguard workpeople and the public generally against the danger of exposure to radiation from radioactive substances and certain irradiating apparatus. The appointments made under Section 6 of the Radioactive Substances Act, 1948, are for three years. The other members are: Mr. J. P. Baxter, Ph.D.; Mr. W. Binks, M.Sc.; Sir Ernest Rock Carling; Mr. D. G. Catcheside, M.A.; Lord Cherwell, F.R.S.; Sir John Cockcroft, F.R.S.; Professor N. Feather, F.R.S.; Mr. L. H. Gray, Ph.D.; Captain Mark Hewitson, M.P.; Dr. J. F. Loutit; Professor W. V. Mayneord; Professor R. McWhirter; Dr. E. R. A. Mereweather; Dr. Ralston Paterson; Mr. H. S. Souttar; Sir George Thomson, F.R.S.; Professor B. W. Windeyer.

Honours Conferred by the Society of Apothecaries

Two eminent scientists were honoured by the Society of Apothecaries in London on May 11 in the presence of a distinguished company, including the French Ambassador. In presenting the Gold Medal in Therapeutics to Professor Jacques Tréfouël, Director of the Institut Pasteur, the Master of the Apothecaries, Professor E. C. Dodds, referred to Professor Tréfouël's clarification of the fundamental rules of chemotherapy. His work on the sulphanilamide preparations, in which his wife collaborated, led to the development of the sulphonamide group of drugs, and was the keystone on which all later research on these drugs was built. Professor Tréfouël's reply in English was brief, modest, and to the point. The Honorary Freedom of the Society was then conferred on Sir Charles Harington, Director of the National Institute for Medical Research. The Master of the Society said that all the work on thyrotoxicosis being done to-day would have been impossible without an understanding of the way in which the thyroid gland works; that understanding was owed to Sir Charles Harington, who first succeeded in characterizing thyroxin and later in synthesizing it. His chemical studies on immunity were also of the greatest importance in medical research. Sir Charles Harington expressed his gratitude for the honour conferred on him. He pointed out that the position of biochemistry as an independent branch had not been achieved without great efforts. Now the work of biochemists was recognized and appreciated, and they could look back with pride along their line of descent from the apothecary.

Chelsea Clinical Society

The annual dinner of the Chelsea Clinical Society was held on May 10, the president, Mr. Nils Eckhoff, being in the chair. In proposing the health of the society, Mr. H. G. Strauss, K.C., M.P., said that the law had every reason to be grateful to the expert witness. Continuing his crusade against the misuse of English, he said he understood that the word "hospitalized" did not mean being converted into a hospital but being sent to one. He gave the society this definition of an intellectual—a man educated beyond his intelligence. In reply, the president referred to the activities of the society during the past year, mentioning the discussions that had taken place on empiricism, films, radioactive isotopes, Graves's disease, and prefrontal leucotomy. He paid tribute to the work of the secretaries of the society for making it a flourishing concern. The health of the guests was proposed in the wittiest speech of the evening by Mr. Frank Cook, and responded to by Air Marshal Sir Richard Peck. The evening concluded with the inauguration of the president for the coming year, Dr. Maurice Bewley.

Hospitals May Close

As a result of the 10% cut in hospital expenditure ordered by the Minister of Health, a number of hospital boards and management committees have announced that they can economize only by closing hospitals or beds. According to Press reports the Manchester Regional Hospital Board has announced that the Stretford Memorial Hospital and the Eccles and Patricroft Hospital may have to close. Others in that region that may be closed are the Victoria Hospital, Accrington; Coplow View, Clitheroe; Parkside, Lancaster; and St. Anne's-on-Sea Memorial Hospital. The Arundel Hospital, in the Worthing Group, may have to close, and the Salisbury Group Hospital Management Committee thinks that it may have to close a small hospital, and that it would be unable to open a new extension ward in a tuberculosis sanatorium for which staff is available. The Windsor Group Management Committee considers that it must close 158 beds if it is to economize further. The North-West Regional Hospital Board is reported to be asking the Minister how it can make the economies required without closing 500 beds.

Streptomycin Royalties for Rutgers University

Dr. S. Waksman, who discovered streptomycin, has presented the money which patent rights on the drug bring him to Rutgers University, New Brunswick. The university will use the money to establish an Institute of Microbiology, with Dr. Waksman as its first director. A new million-dollar building will be erected and the balance will be used to cover operating expenses. Dr. Waksman has handed his patents to the Rutgers Research and Endowment Foundation, on the understanding that any further income will be used to promote research, particularly in microbiology. Royalties on the drug, computed at 2½% of the sale price, totalled between £175,000 and £200,000 last year, according to the *B.U.P.* report which gives these figures. Dr. Waksman, who was born in Russia, came to the United States in 1910 and has been on the staff of Rutgers University for twenty-five years.

Postgraduate Medical Education

Sir John Anderson is the chairman of a Joint Board which has been set up by the three Royal Colleges and the British Postgraduate Federation. The Joint Board is "to consider the existing provisions for the postgraduate education and training of specialists, and invite the attention of medical schools and institutes, hospital authorities, and other bodies providing postgraduate medical education, to such modifications as may from time to time appear desirable." The members of the Joint Board are: Lord Moran and Dr. H. E. A. Boldero; Lord Webb-Johnson and Mr. Julian Taylor; Sir William Gilliatt and Mr. G. F. Gibberd; and Professor Sir Francis Fraser and Mr. J. B. Hunter.

Attends Congress in Turkey

Sir Howard Florey, Professor of Pathology in the University of Oxford, left Oxford on May 10 for Istanbul to attend the Fifth International Congress of Comparative Pathology as a delegate of the Royal Society. He will visit Greece between May 21 and 28 under the auspices of the British Council to lecture to the University of Athens medical faculty on "Antibiotics in the Treatment of Tuberculosis" and "Recent Progress in the Investigation of Antibiotics."

Association for the Paralysed

The British Council for Rehabilitation has recently set up the National Association for the Paralysed, which will be concerned with the care, treatment, and rehabilitation of the paralysed. The National Association would be helped in compiling a register if all who are in touch with paralysed persons would ask them to send their names and addresses, with a statement of the type of paralysis from which they suffer, to the Registrar, the National Association for the Paralysed, British Council for Rehabilitation, 32, Shaftesbury Avenue, London, W.1.

Wills

Professor Arthur Robinson, formerly professor of anatomy at Edinburgh University, at King's College, London, and at Birmingham University, left £23,453. Dr. Henry Morrison, of North Walsham, Norfolk, left £26,409; Dr. David Carlyle Sutton, late of Chester, £46,430; and Dr. Richard Burges, of Stoke Bishop, Bristol, £20,005.

COMING EVENTS

Medical Art Society

The annual exhibition of the Medical Art Society will be held at Walker's Galleries, 118, New Bond Street, London, W., from Friday, May 20, to Thursday, June 2. All inquiries should be addressed to the honorary secretary of the society, Dr. Henry Wilson, 142, Harley Street, London, W.1.

Charities Ball

A Charities Ball organized by the Metropolitan Counties Branch of the B.M.A. will be held at B.M.A. House, Tavistock Square, London, W.C.1, on Thursday, May 26, at 8 p.m. for 8.30 p.m. The proceeds will be devoted to medical charities in urgent need of support. Patrons include the President of the Association and the Presidents of the three Royal Colleges. There will also be a cabaret and facilities for bridge. The cost of tickets including a buffet supper is two guineas each. Applications should be sent to the Secretary, the Charities Ball Committee, Metropolitan Counties Branch, B.M.A. House. Contributions to charities from those unable to attend the ball would also be most welcome and should be sent to the same address.

SOCIETIES AND LECTURES

Monday

LONDON: UNIVERSITY COLLEGE.—At Physiology Theatre, Gower Street, W.C., May 23, 4.45 p.m., "*Selective Toxicity with Special Reference to Chemotherapy*," by Professor Adrien Albert.

Tuesday

EUGENICS SOCIETY.—At Royal Society, Burlington House, Piccadilly, London, W., May 24, 5.30 p.m., "*Some Biological Considerations in Social Evolution*," by Professor H. J. Fleure, F.R.S.

INSTITUTE OF DERMATOLOGY, 5, Lisle Street, Leicester Square, London, W.C.—May 24, 5 p.m., "*Choice of Vehicles for Topical Application*," by Dr. W. H. Goldsmith.

INSTITUTE OF UROLOGY.—At St. Paul's Hospital, Endell Street, London, W.C., May 24, (1) 11 a.m., "*Prognosis of Syphilis (Treated and Untreated)*," by Dr. V. E. Lloyd; (2) 5 p.m., "*Infections of the Urinary Tract other than Tuberculosis, I*," by Mr. A. Clifford Morson.

LONDON UNIVERSITY.—At London School of Economics and Political Science, Houghton Street, Aldwych, W.C., May 24, 5 p.m., "*The National Health Service*," by Sir James S. Ross.

LONDON UNIVERSITY.—At Westminster Medical School, Horseferry Road, S.W., May 24, 5.30 p.m., "*Applications of Polarography to Medicine*," by Dr. Rudolph Brdicka (Prague).

WRIGHT-FLEMING INSTITUTE OF MICROBIOLOGY, St. Mary's Hospital Medical School, Paddington, W.—May 24, 5 p.m., "*Bacterial Nutrition*," by Dr. M. R. Pollock.

Wednesday

GLASGOW UNIVERSITY: DEPARTMENT OF OPHTHALMOLOGY.—May 25, 8 p.m., "*Bleeding and Clotting within the Eye*," by Dr. W. O. G. Taylor.

HARVEIAN SOCIETY OF LONDON.—At Royal College of Surgeons of England, Lincoln's Inn Fields, London, W.C., May 25, 5 p.m., "*The War Collection*," Harveian Lecture by Sir Gordon Gordon-Taylor.

INSTITUTE OF UROLOGY.—At St. Paul's Hospital, Endell Street, London, W.C., May 25, (1) 11 a.m., "*Toxic Manifestations due to Treatment of Syphilis*," by Dr. W. N. Mascall; (2) 5 p.m., "*Calculous Disease of the Kidney and Ureter, II*," by Mr. H. P. Winsbury-White.

ROYAL MICROSCOPICAL SOCIETY.—At B.M.A. House, Tavistock Square, London, W.C., May 25, 6 p.m., Combined meeting of Biological and Industrial Sections. "*The Theory and Practice of Section Cutting*," by Mr. G. W. Moore.

SOCIETY OF CHEMICAL INDUSTRY: FOOD GROUP.—At Astoria Cinema, Gloucester Place, Brighton, May 25, 10 a.m., joint meeting with the Royal Sanitary Institute. General subject of discussion: "*The Care and Preservation of Fish as Food*." Opening Address by Dr. E. B. Hughes, followed by four papers: (1) "*General Introduction to Technological Problems of the Fish Industry*," by G. A. Reay, M.A., Ph.D., F.R.I.C.; (2) "*Some Bacteriological Aspects of Handling, Processing, and Distribution of Fish*," by J. M. Shewan, Ph.D., A.R.I.C.; (3) "*Trends and Developments in Fish Technology*," by C. L. Cutting, Ph.D.; (4) "*Food Hygiene as Applied in the Marketing and Distribution of Fish*," by Dr. J. A. Kerr. Time allowed for discussion.

Thursday

BIRMINGHAM UNIVERSITY.—At Anatomy Theatre, Medical School, Birmingham, May 26, 4 p.m., "*The Problems of Stress Incontinence of Urine in the Female*," Ingleby Lecture by Mr. Charles D. Read.

EDINBURGH UNIVERSITY.—At Anatomy Theatre, University New Buildings, Teviot Place, May 26, 5 p.m., "*The Outlook for the Diabetic*," Honyman Gillespie Lecture by Dr. J. Halliday Croom.

INSTITUTE OF UROLOGY.—At St. Paul's Hospital, Endell Street, London, W.C., May 26, (1) 11 a.m., "*Toxic Manifestations due to Treatment of Syphilis*," by Dr. W. N. Mascall; (2) 5 p.m., "*Infections of the Urinary Tract other than Tuberculosis, II*," by Mr. A. Clifford Morson.

LONDON UNIVERSITY.—At Westminster Medical School, Horseferry Road, S.W., May 26, 5.30 p.m., "*Applications of Polarography to Medicine*," by Dr. Rudolph Brdicka (Prague).

MEDICO-LEGAL SOCIETY.—At 26, Portland Place, London, W., May 26, 8.15 p.m., "*The Medical Services in Ravensbruck Concentration Camp*," by Major A. K. Mant.

SOCIETY OF PUBLIC ANALYSTS: BIOLOGICAL METHODS GROUP.—At No. 3 Room, Gas Industry House, 1, Grosvenor Place, London, S.W., May 26, 6.30 p.m., "*Use of a Rotating Drum in Assessing the Activities of Paralysant, Convulsant, and Anaesthetic Drugs*," by Messrs. H. O. J. Collier, E. C. Fieller, and R. A. Hall; "*The Microbiological Assay of Growth Factors after Paper Chromatography*," by Mr. J. S. Harrison; "*A Method for Determining the Potency of Heparin*," by Mr. R. F. Long.

ST. GEORGE'S HOSPITAL MEDICAL SCHOOL, Hyde Park Corner, London, S.W.—May 26, 4.30 p.m., "*Psychiatry*," lecture-demonstration by Dr. D. Curran.

Friday

EDINBURGH UNIVERSITY.—At Physiology Lecture Theatre, University New Buildings, Teviot Place, Edinburgh, May 27, 5 p.m., "*Greek and Roman Medicine*," by Dr. Douglas Guthrie.

KENT AND CANTERBURY HOSPITAL, Canterbury.—May 27, 5 p.m. to 7 p.m., clinical meeting.

APPOINTMENTS

BROWN, JOHN KERR, M.B., Ch.B., D.P.H., Medical Officer of Health, Metropolitan Borough of Greenwich.

CAITHNESS, J. F., M.B., Ch.B., D.P.H., Medical Officer of Health, Borough of Batley, and Divisional Medical Officer, West Riding County Council.

LEAKEY, BARBARA M., M.B., B.S., Assistant County Medical Officer, West Riding of Yorkshire.

RILEY, JAMES F., M.D., F.R.C.S.Ed., D.M.R.T., Assistant Radiotherapist, Royal Infirmary, Dundee.

BIRTHS, MARRIAGES, AND DEATHS

BIRTHS

Collins.—On May 2, 1949, at Moorlands Nursing Home, Kenilworth, to Violet, wife of Dr. W. Collins, a son.

Evans.—On May 11, 1949, at Nuffield House, Guy's Hospital, London, S.E., to Winifred (née Groom), wife of Dr. M. L. Hudson Evans, Lewisham, a sister for Timothy—Sara.

Hopkinson.—On April 22, 1949, at Preston Infirmary, to Sylvia, wife of Dr. J. J. Hopkinson, a daughter—Susan.

DEATHS

Dale.—On April 28, 1949, at "Arley," Selbourne Road West, Worcester, Arthur James Dale, M.D., aged 79.

Forrest.—On April 30, 1949, James Forrest, M.B., Ch.B., of 1, Duke Street, London, W., aged 72.

Hett.—On May 3, 1949, in London, Geoffrey Seccombe Hett, F.R.C.S., aged 70.

Hume.—On May 2, 1949, at 27, Fitzroy Square, London, W., John Gordon Hume, M.R.C.S., L.R.C.P., aged 78.

Jones.—On April 30, 1949, at a nursing-home, Joseph Jones, M.D., of Howarth Cross, Leigh, Lancs.

Neylon.—On May 3, 1949, in London, Michael Louis Neylon, L.R.C.P.&S.Ed., L.R.F.P.S.Glas., of Sydney, Australia, and late of Assouan, Egypt.

O'Dowd.—On April 27, 1949, at Jersey, C.I., Francis John O'Dowd, D.S.O., M.R.C.S., L.R.C.P., late I.M.S., aged 38.

Riddell.—On May 4, 1949, at Langbank, Bowness-on-Windermere, David Riddell, M.D., aged 71.

Snook.—On April 29, 1949, at Salisbury, Wilts, Samuel Penny Snook, M.R.C.S., L.R.C.P., of Weymouth, Dorset.

Strachan.—On Feb. 20, 1949, at Johannesburg, South Africa, Archibald Sutherland Strachan, M.D.

Whitwam.—On April 22, 1949, at Paignton, Leonard Sykes Whitwam, M.B., Ch.B., Surgeon Commander R.N., retired, aged 74.

Wilson.—On April 26, 1949, at Gwynfryn, Denbigh, Robert Scott Wilson, L.R.C.P.&S.Ed., L.R.F.P.S.Glas.

Wood.—On April 17, 1949, Charles Cruden Wood, M.B., Ch.B., of 15, Trevor Street, London, S.W.7.

Woodwright.—On May 2, 1949, at 13, Collingham Road, London, S.W., Charles Sharman Woodwright, C.B.E., L.R.C.P.&S.I., & L.M., Surgeon Rear-Admiral R.N., retired.

Any Questions?

Correspondents should give their names and addresses (not for publication) and include all relevant details in their questions, which should be typed. We publish here a selection of those questions and answers which seem to be of general interest.

Penicillin Inhalations

Q.—*Is inhalation of penicillin by means of an electric pneumostat recognized as part of the successful treatment of bronchiectasis? If so, can you tell me the strength of the penicillin solution employed, the period of daily treatment, and the average time required to produce improvement? What other diseases benefit from this method?*

A.—Inhalations of penicillin with the help of various types of apparatus have been usefully employed in the treatment of many respiratory infections. In bronchiectasis they will diminish the quantity of sputum and produce general symptomatic improvement; these benefits are transient, and within a few days of stopping the inhalations the patient will have returned to his previous condition. Their main value is as a preoperative measure to diminish the risks of lobectomy. Many different methods of inhalation have been used; in most about 30,000 units in a volume of some 10 ml. is vaporized and inhaled twice a day.

Apnoea on Tracheal Intubation

Q.—*What is the cause of prolonged apnoea on passing an intratracheal tube orally? The anaesthetic sequence was cocaine, thiopentone, cyclopropane, and ether given by a closed-circuit machine. An attempt was made to establish respiration by forcing a little ether vapour into the lungs. What is the danger of the condition and how can it be prevented or treated?*

A.—The passage of an endotracheal tube through the larynx is commonly followed by a period of apnoea. This is reflex in origin and, as might be expected, is usually encountered when intubation is performed under light anaesthesia. As a rule the apnoea is of short duration and spontaneous respiration soon starts. Should the apnoea persist or cyanosis develop, one or two gentle inflations of the lungs with oxygen will usually restore the patient's colour and be followed by spontaneous respiration. An attempt to force ether vapour into the lungs in light anaesthesia may result in generalized bronchoconstriction as well as a persistence of the apnoea. The occurrence of this reflex may be prevented by effective surface analgesia of the larynx or deeper general anaesthesia before intubation is attempted. Certain risks are attached to the passage of endotracheal tubes under light anaesthesia. In addition to the anoxia associated with the apnoea described above, cardiac arrhythmias are frequently seen, while sudden death has been reported as occurring in these circumstances.

Iridocyclitis

Q.—*What is the treatment for recurrent attacks of iridocyclitis with conjunctival oedema? In one of my patients the condition starts in the right eye and slowly clears up with "albucid" drops, but before it is entirely cured the left eye becomes affected. "Benadryl" has been tried, also a mercury and atropine ointment. The condition now recurs every fortnight.*

A.—There is no clear answer to this question. Iridocyclitis is an inflammatory affection, and, as with other inflammatory diseases of the eye and elsewhere in the body, little is known of the pathology. A parallel to iridocyclitis is rheumatoid arthritis. Both conditions are distressingly common, and in both a mass of hypothetical causes, mainly of an infective character, have been postulated. Evidence in support of these views is scanty, and therapeutic measures have proved disappointing. Treatment must therefore be symptomatic. Albucid drops are useless, as there is no ocular infection in these cases. Benadryl has likewise no rational application, as there is nothing to suggest that iridocyclitis is allergic in character. Atropine must be the standby to prevent complications consequent on iris adhesions and the formation of exudate. Iridocyclitis is sometimes found in association with low-grade pulmonary tuberculosis, and also with rheumatoid arthritis and ankylosing spondylitis. The patient should be examined for the possible presence of these conditions. As empirical measures, heat in the form of short-wave diathermy in the acute phase, and *x*-ray treatment possibly in the quiescent phase, may have to be considered.

Inoculation in Pregnancy

Q.—*A woman three months pregnant is joining her husband in Malta. Is vaccination or T.A.B. inoculation likely to have any adverse effect on mother or foetus?*

A.—The theoretical risk is that in the event of a very severe reaction the hyperpyrexia might kill the foetus. In practice, however, no harm usually results, and the general view is that vaccination or T.A.B. inoculation is not contraindicated at any stage of pregnancy. J. A. Urner (*Amer. J. Obstet. Gynec.*, 1927, **13**, 70) vaccinated 129 pregnant women, and there were no cases of abortion or premature labour. A. Villarma and J. S. Galang (*J. Philipp. Is. med. Ass.*, 1930, **10**, 311) found no ill effects to either mother or foetus following immunization of pregnant women during a typhoid epidemic. In neither case, however, does the procedure convey immunity to the child, which has to be protected independently after birth.

Bilateral Pulmonary Cysts

Q.—*A patient has bilateral pulmonary cysts, and it has been suggested that a phrenic nerve avulsion would lead to healing of these cysts. He has a poor chest expansion and also some muco-purulent sputum at times. Have you any information about the end-results of this operation in such a case?*

A.—The use of phrenic paralysis in cystic conditions of the lung must be regarded at present as a method which may be tried in a very few special types of case, but not as an established therapeutic procedure. Some types of pulmonary cyst, congenital and acquired, enlarge by becoming inflated by air as a consequence of valvular mechanisms in their bronchial communications. This applies especially to those which arise peripherally in the broncho-pulmonary tree and approximate to bullous emphysema. In certain cases of this type where symptoms are produced by inspiratory inflation of a localized cyst or cysts, especially at the base of the lung, some benefit has been claimed from phrenic paralysis. This, by diminishing the force of inspiration, and possibly also by altering the position of the cyst in relation to the hilum of the lung and hence the conformation of its bronchial communication, may interfere with the mechanism by which the cyst becomes inflated, and thereby relieve those symptoms which arise from over-inflation of the cyst. If the condition is accurately described as a cyst, there can be no question of its "healing," since there is an epithelial lining which effectively prevents obliteration. The factors concerned in these cases are so difficult to evaluate that the brief account of the case given in the question is not enough to permit a dogmatic opinion on the likelihood of benefit resulting from phrenic paralysis, though the following observations can be made. With bilateral cysts it seems unlikely that phrenic paralysis will be beneficial, unless symptoms are being produced by recurrent or persistent inflation of the cyst or cysts on one side only. In the unlikely event of this being the case, a temporary paralysis of the phrenic nerve by crushing might be tried on the side on which the over-inflation occurs; permanent paralysis without a preliminary trial of temporary paralysis would be very unwise.

It will be clear from the foregoing account that phrenic paralysis can be expected to relieve only symptoms due to inflation of the cyst, such as paroxysmal increase in dyspnoea; it could do nothing for constant dyspnoea on exertion or for such symptoms as cough and expectoration. The account of the case given suggests that there may be a considerable degree of generalized emphysema, or widespread cystic change which would preclude radical surgical treatment. If this is not so, and the parts of the lungs not occupied by the cysts are normal, resection of the pulmonary segments containing cysts might be considered, even though this might involve operations on both sides of the chest.

Pediculosis Pubis

Q.—*What is the most effective treatment of pediculosis pubis?*

A.—If the hair is shaved off, only soap and water are necessary. If the hair is not removed, 2% D.D.T. in an emulsion is effective.

Non-specific Urethritis

Q.—*(a) What treatment is most likely to cure non-specific urethritis of virus origin in a male? (b) What percentage of success is claimed for neoarsphenamine? (c) What is the likelihood of relapse after alcohol or exercise? (d) What is the corresponding condition in the female? An unmarried man aged 29 has non-specific urethritis. As his reactions to the Wassermann, Kahn, and gonococcal complement-fixation tests, and a prostatic smear, are all negative, the condition was presumed to be of virus origin. It cleared up after treatment with sulphadiazine, abstention from alcohol and exercise, mist. sod. cit. et hyoscyam., and large quantities of fluids, but relapsed. For the last two months there has been only slight discharge at the end of micturition, usually aggravated by alcohol.*

A.—(*a*) Streptomycin appears to be the most effective antiviral agent, so that it should be well worth trying, if available. (*b*) From time to time reports of successful treatment of non-gonococcal urethritis with neoarsphenamine have appeared, but the writer knows of no series of cases so treated, so that it is impossible to give a percentage figure. (*c*) Either alcohol or exercise might cause a recurrence, the former because it is an irritant to the urethra, and the latter because inflamed tissues generally do better when placed at rest. (*d*) Presumably leucorrhoea in the female is the counterpart of non-gonococcal urethritis in the male; neither is a medical entity, and both are probably due to a variety of causes.

As regards the patient whose condition is described, it would be as well to carry out further investigations before resuming treatment. The urethral discharge and prostatic fluid should be examined microscopically and culturally; it may be that the condition is essentially a prostatorrhoea. If not, a urethroscopy should be done; if this shows a "sago-grain" urethritis, dilatation with a Kollmann's dilator should be carried out, followed by irrigation with mercury oxycyanide 1 in 6,000, once a week for several weeks or until the condition clears up. If a stricture is discovered, appropriate measures should be taken. If the above examinations are negative, no further treatment is indicated, since overactive treatment often tends to perpetuate signs and symptoms.

Oesophageal Stricture

Q.—*A woman of 51 has had increasing oesophageal obstruction with frequent spasmodic complete blockage for the past eleven years. This was recently demonstrated radiologically as a tight stricture, with no ballooning above it, probably due to cicatrization of a peptic ulcer with no x-ray evidence of activity, though there is slight bleeding during oesophagoscopy and dilatation. The obstruction is ½ inch (1.25 cm.) above the diaphragmatic aperture; there has never been actual pain, so that it is difficult to accept the peptic ulcer theory. Instrumental dilatation under general anaesthesia has given relief for only a day or two. Passage of bougies did not prevent complete closure by spasm at the following attempted meals. What further treatment is advised?*

A.—The significant points in this case would appear to be: (*a*) The absence of any appreciable dilatation of the oesophagus as shown by a barium swallow; therefore cardiospasm is unlikely. (*b*) The generally good condition of the patient after eleven years' history, practically ruling out neoplasm. (*c*) The presence of a stricture in the last inch of the oesophagus, which is resistant to dilatation—suggesting an organic aetiology, which, in the absence of other history, points to a peptic ulcer. Such ulcers can exist without appreciable pain, but after such a long history anything other than excision is unlikely to yield results. Fibrosis and peri-oesophagitis occur just as with other peptic ulcers. For this reason cauterization of the stricture seems definitely contraindicated. In view of the facts (1) that all other methods have received a more than fair trial, (2) that the patient's general condition makes her a good operative risk, (3) that the lesion is situated in the optimal position for comfortable surgical technique, and (4) that surgery for oesophageal lesions (with suitable anaesthetic methods) has in latter years become a reasonably safe procedure, excision of the stricture and oesophago-gastrostomy would seem to be strongly indicated.

Sacral Oedema

Q.—*(1) What level of thrombosis in the inferior vena cava will produce sacral oedema? (2) What is the commonest cause of sacral oedema?*

A.—(1) Thrombosis of the inferior vena cava would not cause sacral oedema alone, but only as part of a general oedema below the umbilicus.

(2) The common cause of sacral oedema is prolonged sitting-decubitus necessitated by illness. Any illness for which a patient has to be kept in bed for a long period may lead to the development of sacral oedema.

NOTES AND COMMENTS

Oestrogen Therapy of Menorrhagia.—Dr. G. I. M. SWYER (London, W.C.1) writes: In reply to a question regarding oestrogen therapy for prolonged and heavy uterine bleeding ("Any Questions?" April 23, p. 736), the statement is made that "... it is emergency treatment in that it controls the bleeding by raising the oestrogen level above the bleeding threshold. There is still the problem of preventing or controlling oestrogen withdrawal haemorrhage, which is likely to occur when treatment is suspended." These remarks are unjustified, and show little grasp of the true place of oestrogens in the *treatment* as well as the control of so-called functional uterine bleeding. Indeed, the initial control is merely the commencement of treatment, the essence of which consists in the production of regular withdrawal bleedings (which are not "haemorrhages" in the sense of uncontrolled floodings). In the climacteric phase the judicious continuation of this treatment with gradual reduction in dosage is frequently sufficient to produce a calm and satisfactory menopause. In the reproductive years, however, treatment cannot claim to have produced a cure without having re-established ovulation, and there is no doubt that with the proper dosage of oestrogens and, later, of oestrogens and progestogens, ovulation can be induced in an encouraging number of patients treated in this way. It is on these grounds that I would regard treatment with oestrogens as being something more than merely palliative or "emergency"; in many cases it is truly curative.

Granuloma Annulare.—Dr. F. PIERS (Nairobi) writes: In "Any Questions?" (March 12, p. 464) a correspondent asks about the modern treatment of granuloma annulare. For some obscure reason this condition is not uncommon here. I have found that infiltration of the lesions with a 2% solution of procaine (without adrenaline) in most cases results in a complete disappearance of the plaques. The amount of fluid one has to inject varies according to the size of the lesions, and some force is usually required to get the fluid in, and under, the hard plaques. But the method is easy to apply and entirely innocent. The rationale of this treatment is perhaps that lymphatic drainage is facilitated, and the quick and complete disappearance of the disk-like infiltrations supports this view.

Convulsions.—Dr. ERNST GUTHANER (Gatton, Queensland) writes: The answer given to the inquirer on convulsions ("Any Questions?" March 12, p. 463) mentions the traditional hot bath, though apparently irrelevant, as useful in occupying the mother until the arrival of the doctor or the spontaneous end of the convulsions. This hot bath, often reinforced by mustard, is absurd when the convulsions are brought on by pyrexia as the forerunner of infection, and can be decidedly harmful. The writer has seen one case where after a hot mustard bath the child was brought to the surgery with a hyperpyrexia of 105° F. (40.6° C.). It was limp, comatose, and died after a few hours in hospital. It is more rational to bring the temperature down in these cases by lukewarm sponges or antipyretics. On no account should they be given a hot bath, as it is against the dictum of *nil nocere*.

All communications with regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, LONDON, W.C.1. TELEPHONE: EUSTON 2111. TELEGRAMS: *Aitiology, Westcent, London.* ORIGINAL ARTICLES AND LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone. Authors desiring REPRINTS should communicate with the Publishing Manager, B.M.A. House, Tavistock Square, W.C.1, on receipt of proofs.
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